

A LIST OF THE  
GOLD COAST  
PTERIDOPHYTA

C. D. ADAMS AND A. H. G. ALSTON

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# A LIST OF THE GOLD COAST PTERIDOPHYTA

By C. D. ADAMS and A. H. G. ALSTON

SINCE the University College of the Gold Coast came into existence in 1948 investigation of the flora and natural vegetation of the country has been carried out with the intention of producing a Flora which would include the *Pteridophyta*.

In December 1949 it was arranged that the author resident in the Gold Coast should undertake the necessary collecting, herbarium curating, and recording of field observations of the *Pteridophyta*. Professor A. S. Boughey lent much practical assistance and encouragement; he and the University College of the Gold Coast provided travel facilities, within and outside the Gold Coast, without which this work would have not have been possible.

In the course of field work many Gold Coast people, too numerous to mention individually, have given their help, but special gratitude is due to Nana Ofori Atta II, Omanhene of Akyem Abuakwa State, for agreeing to preserve the Puso Puso ravine for botanical studies, and to all the collectors, past and present, who have contributed to our knowledge.

In April 1950 the author on the staff of the British Museum (Natural History) consented to undertake identifications and critical taxonomic examinations. The greater part of the taxonomic work has been carried out in the Museum. The writers express gratitude to the Keeper of Botany for his advice and help in preparing the manuscript for publication as well as for the facilities provided.

Thanks are also due to the Director of the Royal Botanic Gardens, Kew, for permitting the use of the Kew Herbarium collections and to Mr. F. Ballard for his co-operation. Gratitude is also extended to Dr. O. Hagerup of the Universitetets Botaniske Museum, Copenhagen, for the loan of valuable specimens from Thonning's collections.

This List is, as far as possible, an up-to-date statement of the taxonomy, nomenclature, and broad distribution of most of the indigenous Gold Coast *Pteridophyta*.

The habitat notes are the result of field observations of the living plants in many parts of the Gold Coast and in neighbouring countries, combined with summaries of collectors' annotations. They are intended to be descriptive rather than ecological as the definition of some of the smaller vegetation units is still uncertain. For similar reasons many altitude records have been omitted.

## DISTRIBUTION

The geographical arrangement of the specimens in the List is in accordance with political areas shown by the boundaries on the Gold Coast Survey 1:1,000,000 Map, 8th edition, corrected 1947.

The primary division is into Colony, Southern Togoland, Ashanti and Northern Territories (including the northern part of Togoland under British Trusteeship).

The Colony is subdivided into Western and Eastern Provinces each of which has



four Administrative Districts, the smaller Accra and Akwapim-New Juaben Districts being considered together as one unit, as also are Ada and Keta, as follows:

COLONY. *Western Province*

- I. Ahanta-Nzima (SW.)
- II. Wasaw-Aowin (W. and Central)
- III. Sefwi (NW.)
- IV. Cape Coast (E. and Central)

COLONY. *Eastern Province*

- I. Birim (N.)
- II. Accra and Akwapim-New Juaben (S.)
- III. Volta River (E.)
- IV. Ada and Keta (SE.)

The remaining Colonial Regions are divided into Districts as follows:

SOUTHERN TOGOLAND

- I. Ho (S.)
- II. Krachi (N.)

ASHANTI

- I. Wenchi-Sunyani (NW.)
- II. Kumasi (W. and Central)
- III. Bekwai (S.)
- IV. Mampong (NE.)

NORTHERN TERRITORIES

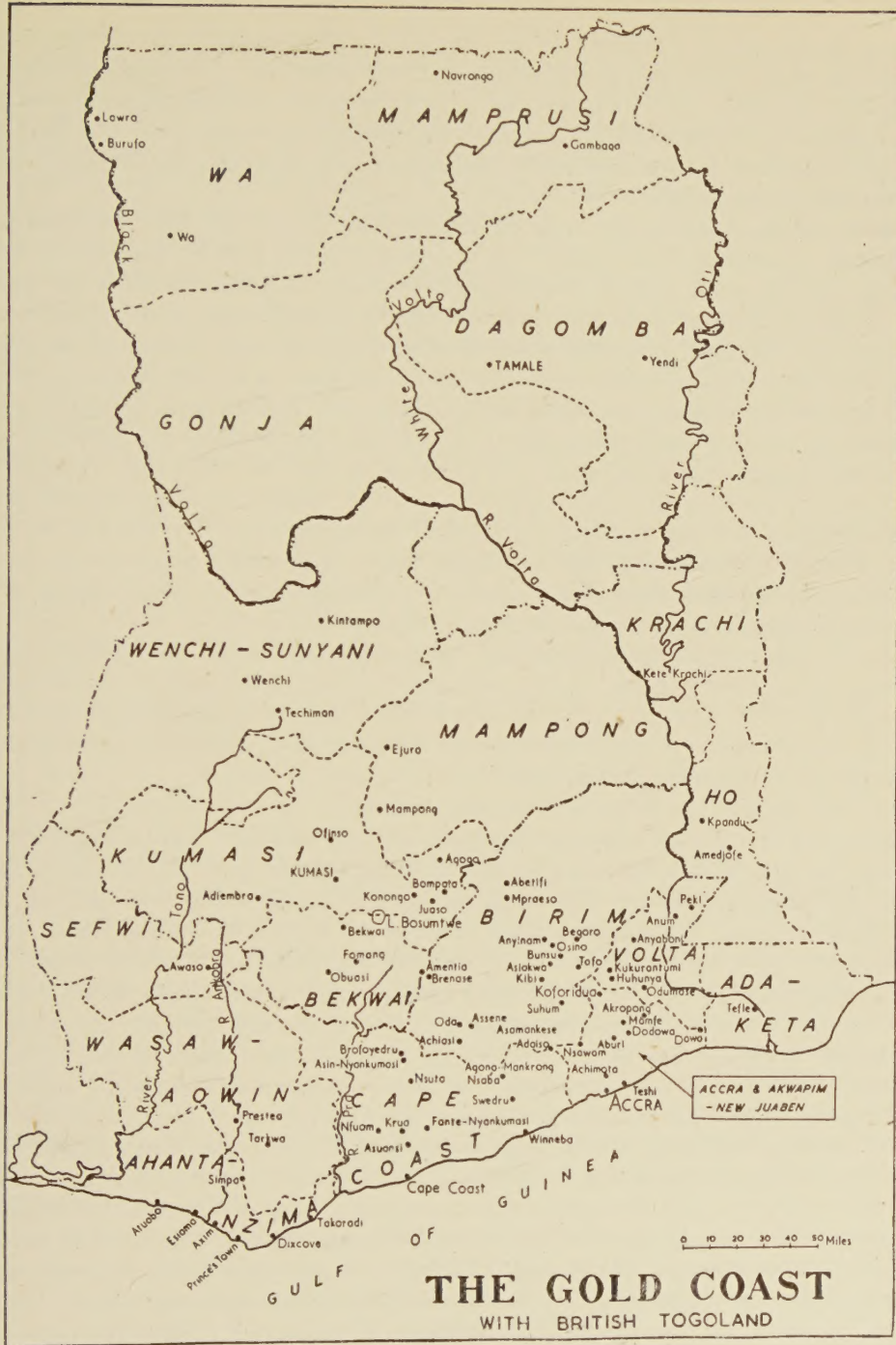
- I. Gonja (SW.)
- II. Dagomba (SE.)
- III. Wa (NW.)
- IV. Mamprusi (NE.)

The approximate position of the District within each Province or Colonial Region is indicated in brackets.

The spelling of place-names is taken mostly from the same map.

The Districts vary greatly in size and also bear little relation to the distribution of the natural vegetation or to the topography. They are adopted purely for convenience. On the other hand, the distribution of the plants mentioned in this list is closely associated with that of the phanerogamic flora in local ecological units.

There are certain large formations which must be recognized. The whole of the Northern Territories, north Ashanti, particularly Mampong District, the part of Birim District north of the Afram River together with most of the Krachi District of Southern Togoland constitute savannah country of which the greater part is Guinea Savannah. This formation also extends along the lower Volta and abuts on to the Accra Plains. This is a region of low rainfall stretching from Takoradi in the west to the Volta in the east and reaching inland from the coast to varying depths



MAP OF THE GOLD COAST

— · — · — = Boundaries of Colonial Regions, i.e. the Colony proper, Southern Togoland, Ashanti and Northern Territories. The Colony is divided into Western and Eastern Provinces. — — — = Boundaries of Districts.



of up to twenty miles. *Pteridophyta* are very poorly represented in savannah country and include only such plants as show a geophytic habit, e.g. *Ophioglossum* spp., or are aquatic annuals, e.g. *Marsilea* spp., *Azolla africana* and *Salvinia nymphaeifolia*. The records of *Adiantum philippense* and *Nephrolepis undulata* from the Northern Territories indicate a more northerly distribution for these two species than is the case for other ferns listed.

The rest of the country, i.e. most of Ashanti, the Colony and the Togoland hills, is covered with forest. This forest is subject for the most part to double-maximum rainfall with the total rainfall diminishing from the south-west towards the north-east. Included here are isolated areas with higher rainfall such as the Atewa range and the Togo Plateau. The forest referred to in the list as 'wet' is that of the south-west, and those isolated areas where the rainfall exceeds 70 inches; it is to be understood that wet conditions may occur locally near rivers, streams and swamps in other parts of the forest. The topography of the forest country also changes from the south-west towards the north-east in that the land becomes more hilly and rises to greater elevations until the scarp country is reached. Sandstone scarps extend south-eastwards from Wenchi, Mampong (Ashanti) and Kwahu to the Volta with, from there, a south-westerly arm, the Akwapim ridge. The forest cover of this higher ground is of a distinct type and is referred to descriptively as 'dry'. Much of the Togoland highlands support the same type of forest.

Some areas have been very thoroughly studied, but for much of the country records are few or altogether lacking. Further collections are needed especially from western and north-western Ashanti, Sefwi District of the Colony, the Mampong and Kwahu scarp country and the transitional forest to the north of it, as well as from the more northerly parts of the Togo highlands.

Notes on three of the better-known areas follow.

Collections in the Axim District (Ahanta-Nzima) and near Tarkwa and Prestea (Wasaw-Aowin) have been made by Burton and Cameron, W. H. Johnson, F. R. Irvine, P. Cudjoe and others. This is the part of the Gold Coast forest which has been termed Evergreen. Fifty-four species are recorded from this area and of these eighteen are at present not known from the adjoining Cape Coast District to the east, including two species, *Tectaria buchholzii* and *Schizoloma ensifolium*, which are confined to the western region. Scandent sun-ferns are conspicuous in secondary formations and along roadsides. Many otherwise common terrestrial and high-level epiphytic species seem to be uncommon or rare. *Asplenium* species are notably few.

Extensive collections have been made by H. E. Box and J. Scholes in the Cape Coast District, especially at Asuansi and in the Kakum and Foso-Juaso Forest Reserves (the latter now being known as Ochi Headwaters Forest Reserve). Fifty-five species are recorded from this area, representing most of the common terrestrial forest ferns and high-level epiphytes as well as many species restricted to swampy areas and forest streams. No species is exclusive to this area which includes several aspects of the low-altitude natural forest and much secondary vegetation.

Small areas of the Atewa range have been more intensively studied than any other region. This range of hills with an area of over 140 square miles above 1,000 feet, and rising to about 2,500 feet, is situated in Birim District of Eastern Province with



Kibi near its centre. Cocoa farms are frequent up to 1,000 feet and above that plantain, banana and coco-yam (*Xanthosoma sagittifolium*) are sporadically cultivated. Most of the area is inaccessible by roads or paths and in many places forest apparently not significantly altered by man exists. The annual rainfall is high, 80 inches or over, but varies locally. Permanent streams exist which feed the Birim, Ayensu and Densu Rivers, the only south-flowing rivers of any magnitude arising in the Eastern Province. The sources of these three rivers lie within three miles of each other in the centre of the range. Cloud often forms in the afternoon and showers and thunderstorms are frequent, while mists may not disperse in the morning until up to four hours after sunrise. The result of such topographic and climatic conditions is constant high humidity, especially in steep-sided sheltered valleys such as the Puso Puso ravine where even in the dry season the Harmattan has little noticeable effect.

Although W. H. Johnson and F. R. Irvine collected in the neighbourhood of Kibi the richness of the pteridophyte flora of the Atewa range was not properly revealed until Box and Scholes visited the area in 1941-1943. Out of 114 strictly forest species known in the Gold Coast 78 are recorded from this area including such nearby places as Anyinam, Apapam, Asiakwa, Awaham, Bunsu, Osino and Potroasi; while from the Puso Puso ravine, which lies in the part of the range nearest to Asiakwa in the north-east, 62 species occur in an area less than one square mile in extent. Of the species known from the range 9 are unrecorded elsewhere and 5 from the Puso Puso ravine only.

Certain species such as *Cyathea camerooniana* and *Bolbitis fluviatilis* seem, as far as is known, to be confined to the Atewa range and the south-western forest. Several other species are common in these two areas and rather rare elsewhere, e.g. *Pteris burtoni*, *Lomariopsis* spp. and *Lygodium smithianum*.

Records are insufficient for reliable comparisons to be drawn between other areas, but affinities between the Atewa range and the drier forest of the scarp and between each of these and the Togo highlands can be recognized. For example Begoro and Bosuso are situated on the scarps to the north of the Atewa range. Certain rare species are so far recorded only from the Begoro area and the Atewa range, e.g. *Cyathea manniana*, *Asplenium cuneatum*, *A. geppii*, *A. diplazisorum* and *Loxogramme latifolia*. The soils of the scarp are sandy and quite unlike the deep sticky clay soils of the Atewa range. Climatic conditions may be similar in the Begoro area to those of the range, but few of the streams have any high degree of permanence.

In addition there is a distinctive fern flora of the marginal forest zone which is transitional to savannah. The limits of this flora are not fully known, but the characteristic species of it include those mentioned in the note after *Asplenium emarginatum*.

Much remains to be discovered before a full understanding of the distribution of these plants is reached; many of the correlations already made are empirical. Of perhaps the greatest phytogeographical importance is the comparison which remains to be made in detail between the flora of the Atewa range and that of the mountains of West Africa where considerable similarities are already apparent.

Finally it is perhaps worth pointing out, without comment at present, the almost total absence of endemic species



## CLASSIFICATION

The classification of R. E. Holttum (in Journ. Linn. Soc. Lond., Bot. liii: 123-158 (1947)) has been adopted in the Systematic List for the Leptosporangiate Ferns.

Holttum has recognized the subdivision of the large genera *Polypodium* and *Dryopteris*, which, *sensu stricto*, are not found in the Gold Coast but are represented by the segregates *Microgramma*, *Microsorium* and *Phymatodes* in the former case, and by *Cyclosorus*, *Thelypteris* and *Ctenitis* in the latter. Some of the resulting new combinations for African species have already been made by Copeland, Ching and Tardieu-Blot in recent publications; others appear for the first time here.

The genus *Diplazium* is retained as representing a clear-cut group in the Gold Coast but is less certainly distinct from *Athyrium* when compared with the members of the latter genus from the mountains of West Africa.

The genus *Trichomanes* has not been subdivided, mainly on account of the doubtful practical value of splitting up the small number of species, most of which are rare, represented in the country. That is not to say that our species are uniform in character; on the contrary they would fall into four of Copeland's genera (E. B. Copeland in Philipp. Journ. Sci. lxvii: 1-110 (1938)).

## SYSTEMATIC LIST

The *Pteridophyta* included in this list are considered to be either indigenous or fully naturalized.

Only the synonymy which refers directly to the currently accepted name, or has been published in connexion with a Gold Coast plant, has been included.

Abbreviations employed for herbaria in the list are as follows:

B=Botanical Museum, Berlin-Dahlem. BM=British Museum (Natural History), London. C=Universitetets Botaniske Museum, Copenhagen. FHI=Forestry Department, Ibadan, Nigeria. FHK=Forestry Department, Kumasi, Gold Coast. FI=University of Florence. GC=Gold Coast Herbarium, University College of the Gold Coast. IFAN=Institut Français d'Afrique Noire, Dakar. K=Royal Botanic Gardens, Kew. P=Muséum National d'Histoire naturelle, Paris. US=Smithsonian Institution, Washington.

The abbreviation F.R. is used for Forest Reserve.

## FILICINAE

## OPHIOGLOSSACEAE

## OPHIOGLOSSUM L.

**Ophioglossum ammophilum** C. D. Adams in Ann. & Mag. Nat. Hist., Ser. 12, vii: 874 (1954).

COLONY. *Eastern Province*: II. 17 km. on Accra-Ada road, *Adams 2341A* (GC). Near Kpeshi Lagoon, near Labadi, *Adams 2353* (GC), *2726* (BM; GC Type).

In open sandy grassland near the sea



**Ophioglossum costatum** R.Br., Prodr. Fl. Nov. Holl. i: 163 (1810).

*Ophioglossum fibrosum* (Schumach.) in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 226 (1829).—Kuhn, Fil. Afr.: 176 (1868).

COLONY. *Western Province*: I. Frederiksberg, *Thonning* (ex Schumach.). IV. Winneba plains, *Hinds GC 2499* (GC). *Eastern Province*: II. Near Kpeshi Lagoon, near Labadi, *Adams 341* (BM; GC; K), *2725* (GC). 59 km. on Accra-Ada road, *Akpabla GC 2186* (GC).

ASHANTI. I. Half-way between Wenchi and Techiman, *Cudjoe 101* (GC).

NORTHERN TERRITORIES. III. Near Wa, *Adams 706* (GC; P), *869* (GC). Burufu, near Lawra, *Adams 930* (GC; US). IV. Navrongo, *Vigne 4608* (K). Jawani, near Gambaga, *Akpabla 667* (GC). West of Gambaga, *Morton GC 7455* (GC).

Local in silted depressions in grass savannah.

**Ophioglossum gomezianum** Welw. ex A.Br. apud Kuhn, Fil. Afr. : 176 (1868).

Var. *gomezianum*.

COLONY. *Western Province*: IV. Winneba plains, *Adams 308* (BM; GC). *Eastern Province*: II. 17 km. on Accra-Ada road, *Adams 2341* (GC). Near Kpeshi Lagoon, near Labadi, *Adams 2355* (GC), *2724* (BM; GC).

In open grassland.

Var. *latifolium* Prantl in Jahrb. Bot. Gard. Berl. iii: 316 (1884).

COLONY. *Eastern Province*: I. Pepiase, Kwahu, *Morton GC 4597* (BM; GC).

In black silty soil overlying rock.

Prantl in his diagnosis of this variety states 'sporae degenerae'. This is of great interest in that the spores of our material, unlike those of any other Gold Coast species which have been examined, appear to lack cytoplasmic contents entirely.

**Ophioglossum gramineum** Willd., Nov. Act. Acad. Erfurt ii: 18 (1802).

ASHANTI. IV. Near Ejura, *Morton GC 9828* (GC).

In savannah grassland.

**Ophioglossum macrorrhizum** Kunze, Anal. Pterid.: 2 (1837).—Die Farnkräuter i: 57, t. 29, f. 1 (1840).

COLONY. *Eastern Province*: II. Near Kpeshi Lagoon, near Labadi, *Adams 2748* (GC).

In open sandy grassland near the sea.

**Ophioglossum reticulatum** L., Sp. Pl. ii: 1063 (1753).

COLONY. *Western Province*: I. Axim-Sekondi road, *Morton A396* (GC), *Cudjoe 129* (GC), *130* (GC). II. Tarkwa, *Fishlock 120* (GC). IV. Cape Coast, *Don* (BM). Asuansi, *Box 2053* (BM; GC), *Scholes 170* (GC; IFAN; K; P; US), *Vaughan GC 2722* (GC).

Locally abundant in sandy soil in wet areas.

## MARATTIACEAE

**MARATTIA** Sw.

**Marattia fraxinea** Sm., Pl. Ic. Hact. Ined. ii: t. 48 (1790).—Chipp, List Herb. Pl. G. C.: 40 (1914).—Irvine, Pl. G. C.: 277 (1930).

COLONY. *Western Province*: I. Basakeh, near Axim, *Cudjoe* 15 (GC). II. Dompem, *Chipp* 47 (FHK; K). Near Tarkwa, *Fishlock* 88 (GC; K). Opon valley, *Irvine* 1302 (GC; K). Neung F.R., near Tarkwa, *Cudjoe* 5 (GC; K; P). III. Awaso F.R., *Akpabla* 874 (GC). IV. Kakum F.R., near Nfuom, *Box* 2850 (BM; GC), 2936 (BM; GC). *Eastern Province*: I. Pami Bepo, Kibi, *Chipp* 540 (FHK; GC; K). Atewa range F.R., near Kibi, *Irvine* 3025 (GC). Puso Puso ravine, Atewa range, *Box* 3262 (BM), 3462 (BM); *Scholes* 448 (GC; BM); *Adams* 325 (GC), 339 (GC). Potroasi, near Kibi, *Adams* 153 (GC). Bunsu, *Cudjoe* 79 (GC).

ASHANTI. II. Bompata, *Vigne* 2715 (FHK; GC; K). Tano-Ofin F.R., *Vigne* 2880 (FHK; K).

Locally abundant in the wet forest especially near permanent streams.

## SCHIZAEACEAE

**LYGODIUM** Sw.

**Lygodium microphyllum** (Cav.) R.Br., Prodr. Fl. Nov. Holl. i: 162 (1810).

*Ugena microphylla* Cav., Ic. & Descr. Pl.: 76, t. 595, fig. 2 (1801).

*Lygodium scandens* sensu Chipp, List Herb. Pl. G. C.: 40 (1914); non Sw.

COLONY. *Western Province*: I. Axim, *Johnson* 997 (GC; K); *Irvine* 2144 (GC; K); *Cudjoe* 73 (GC; P; US); *Morton* (GC). Near Esiam, *Fishlock* (GC); *Deakin* 148 (GC; K). Brawile, near Axim, *Cudjoe* 48 (GC; K). II. Simpa, *Vigne* 2912 (FHK; GC; K). *Eastern Province*. I. Anyinam, *Obeng* 13 (GC; K).

ASHANTI. II. Bantama, near Kumasi, *Box* 2907 (BM; GC).

Occasional on roadside embankments, railway cuttings, and in clearings in the areas of highest rainfall.

This is the species usually known as *L. scandens* (L.) Sw., but the type specimen of *L. scandens* (in Herb. Hermann, vol. i: fol. 32, no. 374, at the British Museum) is not *L. microphyllum* but *L. flexuosum* (L.) Sw., of which *L. scandens* should be regarded as a synonym.

**Lygodium smithianum** C. Presl, Suppl. Pterid.: 112 (1845).

*Lygodium pinnatifidum* sensu Chipp, List Herb. Pl. G. C.: 40 (1914).—Oliv. in Burton & Cameron, To the G. C. for Gold ii: 371 (1883); non Sw.

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Axim, *Chipp* 416 (FHK; K); *Foote* 125 (GC). Near Agona, Dixcove road, *Box* 2075 (GC). II. Bonsa junction, *Johnson* 862 (GC; K). Hemang, *Fishlock* 36 (K). Tarkwa, *Vigne* 4124 (FHK; GC). III. Awaso F.R.? *Akpabla* 888 (GC). IV. Asuansi, *Box* 2042 (BM; GC), 2047 (BM; GC); *Scholes* 229 (GC). Foso-Juaso F.R., *Scholes* 239 (GC). *Eastern Province*: I. Begoro, *Irvine* 1367 (GC). Puso Puso ravine,



Atewa range, *Adams* 36 (GC). Potroasi, near Kibi, *Adams* 162 (GC; K), 394 (GC). Near Apapam, near Kibi, *Adams* 971 (GC; P; US).

ASHANTI. III. Near Fomena, *Adams* 2505 (GC).

Occasional on roadside embankments, railway cuttings and in clearings in the areas of highest rainfall.

## GLEICHENIACEAE

### GLEICHENIA Sm.

**Gleichenia linearis** (Burm. f.) C. B. Clarke in Trans. Linn. Soc. Lond., Ser. 2, Bot. i: 428 (1880).

*Polypodium lineare* Burm. f., Fl. Ind.: 235 (1768).

*Dicranopteris linearis* (Burm. f.) Underw. in Bull. Torr. Bot. Club xxxix: 250 (1907).

COLONY. *Western Province*: I. Axim, *Irvine* 2147 (GC; K). Abra, near Axim, *Box* 2870 (GC). Axim-Agona junction road, *Cudjoe* 53 (GC). II. Tarkwa, *Vigne* 4120 (FHK; GC). *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 37 (GC), 510 (BM; GC; K; P; US). Potroasi, near Kibi, *Adams* 164 (GC), 575 (GC).

ASHANTI. II. Merishe, near Adiembra, *Kitson* 1223 (K).

Habitat similar to that of the last species.

## HYMENOPHYLLACEAE

### TRICHOMANES L.

**Trichomanes africanum** Christ in Journ. de Bot. xxii: 21 (1909).

COLONY. *Eastern Province*: I. Atewa range, *Box* 3503 (BM); *Adams* 1445 (GC). *Western Province*: III. Awaso, *Adams* 2073 (GC).

SOUTHERN TOGOLAND. I. Avatime mount, 750 m., *Johnson* (coll. *Dr. Fisch*) 747 (K); Waribo Mountain, north of Wurupong, *Adams* 1817 (GC), 1826 (BM; GC; FI).

On mossy branches of shrubs and small trees in virgin mountain forest. Apparently rare.

The dried fronds lack the folds which are apparent in *T. melanotrichum* Schlecht.

**Trichomanes chamaedrys** Taton in Bull. Soc. R. Bot. Belg. lxxviii: 29, t. 2 figs. K, L (1946).

COLONY. *Eastern Province*: I. Near Akrum Waterfall, Begoro, *Box* 2948 (BM; GC). *Western Province*: III. Afao Hills F.R., *Adams* 2066 (BM; GC).

On shady precipice walls and on trees in mountain forest at 510 m. altitude.

**Trichomanes chevalieri** Christ apud A. Chev. in Mém. Soc. Bot. France ii, 8: 106 (1908).

COLONY. *Eastern Province*: I. Awaham, near Asamankese, *Adams* 521 (GC). Puso Puso ravine, Atewa range, *Adams* 573 (GC). II. Aburi, *Johnson* (K); *Adams* 402 (GC). III. Bana Hill, Krobo, *Irvine* 2882 (BM; GC). Volta River F.R., *Adams* 377 (BM; GC; P; US), 484 (GC).

Epiphytic on trees and on rocks mainly in the dry forest areas.

**Trichomanes cupressoides** Desv. in Mém. Soc. Linn. Par. vi: 330 (1827).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Box* 3265 (BM; GC); *Scholes* 444 (GC); *Adams* 35 (GC), 340 (BM; GC), 504 (GC), 569 (GC; K; P; US). Atewa range, *Box* 3501 (BM; GC). Near Kibi, *Adams* 1202 (GC).

Local on steep clay banks in deep shade.

**Trichomanes erosum** Willd. in L., Sp. Pl., ed. 4, v: 501 (1810).

*Trichomanes muscoides* sensu Chipp, List Herb. Pl. G.C.: 40 (1914): non Sw.

COLONY. *Western Province*: I. Ancobra River, *Johnson* 986 (K). IV. Asuansi, *Box* 2081 (BM), 2094 (BM), 2480 (BM; GC). Kakum F.R., near Nfuom, *Box* 2856 (BM; GC), 2933 (BM; GC). *Eastern Province*: I. Abetifi Hills, *Johnson* 653 (K, not seen). Near Asiakwa, *Adams* 201 (GC). Puso Puso ravine, Atewa range, *Box* 3266 (BM; GC); *Adams* 419 (GC; K), 495 (GC; P; US).

SOUTHERN TOGOLAND. I. Togo Plateau F.R., *Morton* GC 3803 (GC).

ASHANTI. II. Agogo, *Adams* 2631 (GC).

Frequent on rocks and trees near streams in the wet forest.

**Trichomanes guineense** Afz. ex Sw. in Schrad., Journ. Bot. 1800, 2: 96 (1801).

*Trichomanes rigidum* sensu Chipp, List Herb. Pl. G.C.: 40 (1914): non Sw.

COLONY. *Western Province*: I. Ancobra River and Bonsa junction, *Johnson* 861 (K). Near Axim, *Irvine* 2246 (K). Mielialuma, Basakeh, near Axim, *Cudjoe* 60 (GC; P; US). II. Neung F.R., near Tarkwa, *Cudjoe* 37 (BM; GC; K). IV. Kakum F.R., near Nfuom, *Box* 2934 (BM; GC). *Eastern Province*: I. Near Kibi, *Adams* 1203 (GC).

Terrestrial on wet clay or silt in deep shade. Rather local.

**Trichomanes liberiense** Copel. in Philipp. Journ. Sci. li: 160 (1933).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 1193 (BM; GC).

Epiphytic on the trunk of a small tree near rocky stream at 390 m. altitude.

**Trichomanes mettenii** C. Chr., Ind. Fil.: 644 (1906).

COLONY. *Western Province*: IV. Asuansi, *Box* 2481 (GC; BM); *Scholes* 183A (GC), 185 (GC). Kakum F.R., near Nfuom, *Box* 2918 (BM; GC). *Eastern Province*: I. Near Begoro, *Adams* 255 (BM; GC). Puso Puso ravine, Atewa range, *Adams* 1192 (GC). Near Chapiasi, near Kibi, *Adams* 1198 (GC). III. Near Otrokpe, *Adams* 562 (GC; K; P; US).

ASHANTI. III. Near Fomena, *Adams* 2521 (GC).

Epiphytic on tree-trunks and on rocks near streams in the forest.

## CYATHEACEAE

### CYATHEA Sm.

**Cyathea camerooniana** Hook. in Hook. & Bak., Synops. Fil.: 21 (1865).

COLONY. *Western Province*: I. Near Basakeh, near Axim, *Cudjoe* 20 (GC; K; P; US), 66 (GC). II. Tarkwa-Dompem-Simpa road, *Fishlock* 1 (K). *Prestea*, *Vigne* 3088



(FHK; GC; K). III. Awaso F.R., *Akpabla* 876 (GC). Awaso, *Darko* 31 (BM). *Eastern Province*: I. Puso Puso ravine, Atewa range, *Box* 3273 (BM; GC); *Scholes* 438 (GC; BM); *Adams* 78 (GC), 324 (BM; GC).

ASHANTI. II. Tano-Ofin F.R., *Vigne* (coll. *Lyon* 116) 2876 (FHK K).

Rather local on hillsides near streams in the wet forest.

***Cyathea manniana*** Hook. in Hook. & Bak., *Synops. Fil.*: 21 (1865).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Box* 3272 (BM; GC); *Scholes* 437 (BM; GC; K); *Adams* 77 (GC), 576 (GC; P; US). Begoro, *Box* 3472 (BM; GC).

Very local and gregarious near streams in hilly districts.

## POLYPODIACEAE

### PLATYCIERIUM Desv.

***Platynerium angolense*** Welw. ex Hook. & Bak., *Synops. Fil.*: 425 (1868).

ASHANTI. II. Agogo, *Foot* 52 (GC). Bobiri F.R., *Adams* 538 (GC; K; P; US). IV. Mampong, *Adams & Akpabla* 4526 (BM; GC).

On the branches of tall trees in the forest; very rarely on rocks.

***Platynerium stemaria*** (Beauv.) Desv. in *Mém. Soc. Linn. Par. vi*: 213 (1827).—Cummins in *Bull. Misc. Inf. Kew* 1898: 82 (1898).

*Acrostichum stemaria* Beauv., *Fl. Oware & Benin* 1: 2, t. 2 (1805).

COLONY. *Western Province*: IV. Nsuta, *Cummins* 49 (K). Asuansi, *Box* 2058 (BM; GC). *Eastern Province*: I. Potroasi, near Kibi, *Adams* 167 (GC). II. Aburi, *Irvine* 61 (GC). III. Volta River F.R., near Odumase, *Adams* 994 (GC; P; US).

Epiphytic on the branches of trees in the forest; frequent in the juvenile state on the trunks and low branches of small trees, especially cocoa. More common in the eastern part of the forest than *P. angolense*.

### MICROGRAMMA C. Presl

***Microgramma lycopodioides*** (L.) Copel., *Gen. Fil.*: 185 (1947).

*Polypodium lycopodioides* L., *Sp. Pl.* ii: 1082 (1753).

*Polypodium owariense* Desv. in *Mag. Ges. Naturforsch. Freunde Berl.* v: 314 (1811).

COLONY. *Western Province*: I. Gyamera, near Axim, *Irvine* 2305 (GC; K). Near Axim, *Irvine* 2423 (GC). IV. Asuansi, *Box* 2038 (BM; GC); *Adams* 488 (GC). *Eastern Province*. J. Anyinam, *Obeng* 8 (GC). Bunsu, *Gillett* 155 (BM). Potroasi, near Kibi, *Adams* 172 (GC). Near Asiakwa, *Adams* 195 (GC). II. Aburi, *Johnson* 208 (GC); *Howes* 1190 (GC; K); *Irvine* (GC); *Adams* 34 (GC), 176 (GC; K), 184 (GC). Mampong hill, Akwapim, *Todd* (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Box* 3432 (BM).

ASHANTI. II. Near Kumasi, *Vigne* 3047 (FHK; GC; K).

A common epiphyte on trees, rarely on rocks, throughout the forest area.

**MICROSORIUM** Link

**Microsorium punctatum** (L.) Copel. in Univ. Calif. Publ. Bot. xvi: 111 (1929).

*Acrostichum punctatum* L., Sp. Pl., ed. 2, ii: 1524 (1763).

*Polypodium punctatum* (L.) Sw. in Schrad., Journ. Bot. 1800, 2: 21 (1801); non *P. punctatum* Thunb. (1784).—Kuhn, Fil. Afr.: 151 (1868).—Irvine, Pl. G.C.: 350 (1930).

*Polypodium crassinerve* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 227 (1829); non *P. crassinerve* Bl. (1828).

COLONY. *Western Province*: IV. Asuansi, *Box* 2046 (BM; GC), 2096 (BM; GC). *Eastern Province*: I. Assene, *Foote* 130 (GC). II. Akwapim, *Thonning* 87 (C). Aburi, *Deighton* 631 (K); *Obeng* 3 (GC); *Adams* 211 (GC). Achimota (cultivated), *Irvine* 2591 (GC). III. Volta River F.R., *Adams* 381 (GC).

ASHANTI. II. Agogo, *Foote* 12 (GC).

WITHOUT LOCALITY. *Irvine* 471 (GC; K).

A common epiphyte on trees and sometimes on rocks in the forest.

**DRYNARIA** (Bory) J.Sm.

**Drynaria laurentii** (Christ) Hieron. apud Engl. in Engl. & Drude, Veg. Erde ix, 2: 57 (1908), excl. fig. 54.

*Polypodium propinquum* var. *laurentii* Christ apud De Wild. in Ann. Mus. Congo, Bot. Sér. 5, i: 6, t. 2 (1903).

*Polypodium willdenowii* sensu Chipp, List Herb. Pl. G.C.: 40 (1914); non Bory.

COLONY. *Eastern Province*: I. Pami Bepo, near Kibi, *Chipp* 555 (FHK; GC; K). Begoro, *Irvine* 1177 (GC); *Adams* 422 (GC; P; US). Puso Puso ravine, Atewa range, *Box* 3274 (BM); *Adams* 500 (GC). Near Apapam, near Kibi, *Adams* 975 (GC; P; US).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3388 (GC); *Box* 3435 (BM; GC).

ASHANTI. II. Agogo, *Darko* (GC).

Occasional as an epiphyte on trees at elevations above 300 m.

**PHYMATODES** C. Presl

**Phymatodes scolopendria** (Burm. f.) Ching in Contrib. Inst. Bot. Nat. Acad. Peiping ii: 63 (1933).

*Polypodium scolopendria* Burm. f., Fl. Ind.: 232 (1768).

*Polypodium phymatodes* L., Mant. Pl. Alt.: 306 (1771).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).—Chipp, List Herb. Pl. G.C.: 40 (1914).

COLONY. *Western Province*: I. River Nhwin, near Takoradi, *Box* 2077 (BM; GC). Brawile, near Axim, *Cudjoe* 33 (GC). IV. Without locality, *Cummins* (K). Asuansi, *Box* 2037 (BM; GC), 2060 (BM; GC), 2071 (BM; GC); *Adams* 490 (GC). *Eastern Province*: I. Wankyi, *Chipp* 562 (FHK; K). Abetifi, *Plumptre* 203 (GC). Assene, *Foote* 132 (GC). Kukna, *Bekoe* (GC). Potroasi, near Kibi, *Adams* 170 (GC). Apapam, near Kibi, *Adams* 976 (GC). II. Aburi, *Johnson* 209 (GC); *Obeng* 7 (GC; K); *Box* 2088 (BM; GC); *Adams* 31 (GC; K), 399 (GC).

ASHANTI. II. Bompata, *Vigne* 2720 (FHK; K). Kumasi, *Vigne* 3050 (FHK; K); *Onyeama* 56 (GC). Agogo, *Foote* 99 (BM; GC), 101 (GC).

A very common epiphyte on trees, especially on mature oil-palms, in the forest.



**LOXOGRAMME** (Bl.) C. Presl

**Loxogramme lanceolata** (Sw.) C. Presl, Tent. Pterid.: 215, t. 9, fig. 8 (1836).

*Grammitis lanceolata* Sw. in Schrad., Journ. Bot. 1800, 2: 18 (1801).

*Gymnogramme lanceolata* (Sw.) Hook., Sp. Fil. v: 156 (1864).—Chipp, List Herb. Pl. G.C.: 40 (1914).

COLONY *Western Province*: III. Afao Hills F.R., *Adams* 1962 (GC), 2048 (GC). *Eastern Province*: I. Near Begoro, *Adams* 460 (GC). II. Akropong, Akwapim, *Johnson* 992 (GC; K). Aburi, *Adams* 400 (BM; GC; K; P; US), 401 (GC), 988 (GC). Aburi?, *Johnson* 212 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3399 (GC); *Box* 3431 (BM; GC).

ASHANTI. N. Ashanti, without locality, *Dalziel* 75 (K).

An epiphyte on the low branches and trunks of trees and on palms in the dry forest at elevations above 300 m. altitude. Local.

**Loxogramme latifolia** Bonap., Not. Ptérid. xiv: 334 (1924).

COLONY. *Eastern Province*: I. Near Begoro, *Adams* 459 (BM; GC). Apapam, near Kibi, *Adams* 970 (BM; GC; P; US).

On the branches of small trees in hilly districts above 300 m. altitude. Rare.

## THELYPTERIDACEAE

**CYCLOSORUS** Link

**Cyclosorus dentatus** (Forsk.) Ching in Bull. Fan Mem. Inst. Biol. viii: 206 (1938).

*Polypodium dentatum* Forsk., Fl. Aegypt.- arab.: cxxv, 185 (1775).

COLONY. *Western Province*: I. Near Axim, *Cudjoe* 7 (BM; GC). Agona junction—Dixcove road, *Cudjoe* 51C (GC). II. Mpeasem, Fure F.R., near Prestea, *Cudjoe* 35 (BM; GC), 44 (BM; GC). IV. Agona—Mankrong, *Vanderpuye* 5 (GC). *Eastern Province*. I. Puso Puso ravine, Atewa range, *Adams* 317A (GC), 496A (GC). Near Suhum, *Adams* 382 (BM; GC). Potroasi, near Kibi, *Adams* 393A (GC). III. Boti, near Huhunya, *Adams* 281 (BM; GC). Near Ayemeso, Volta River F.R., *Adams* 997 (GC).

ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 579 (GC). II. Lake Bosumtwé, *Adams & Akpabla* 4539 (GC); *Adams* 539 (GC; K; P; US). Bobiri F.R., *Adams* 531 (GC). IV. Ejura scarp, *Adams & Akpabla* 4523 (GC).

Widely distributed throughout the forest and transitional zones near unshaded streams, paths and roadsides.

**Cyclosorus dewevrei** (Christ ex Bonap.) Adams & Alston, comb. nov.

*Nephrodium pennigerum* sensu Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).—Chipp, List Herb. Pl. G.C.: 40 (1914); non Hook.

*Nephrodium truncatum* sensu Cummins, loc. cit. (1898); non C. Presl.

*Dryopteris afra* Christ apud A. Chev. in Mém. Soc. Bot. France ii, 8: 107 (1908) pro parte.

*Dryopteris dewevrei* Christ ex Bonap., Not. Ptérid. xiv: 207 (1924).

*Dryopteris megaphylla* sensu Irvine, Pl. G.C. 169 (1930); non C. Chr.

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?) *Burton &*

*Cameron* (K). Benyimade, near Axim, *Cudjoe* 8 (GC; K). II. Neung F.R., near Tarkwa, *Cudjoe* 10 (GC). IV. Asin-Nyankumasi, *Cummins* 183 (K); 215 (K). Asuansi, *Box* 2043 (BM), 2059 (GC; BM), 2078 (GC; BM); *Adams* 116 (GC). *Eastern Province*: I. Anyinam, *Obeng* 12 (GC). Assene, *Footte* 134 (GC). Bunsu, *Footte* 110 (GC). Near Asiakwa, *Adams* 83 (GC), 197 (GC). II. Aburi, *Obeng* 12A (GC). Akropong, Akwapim, *Irvine* 2620 (GC).

SOUTHERN TOGOLAND. I. Buem, *Mischlich* (P).

ASHANTI. II. Merishe, near Adiembra, *Kitson* 1224 (K). Bompata, *Vigne* 2708 (FHK; K). III. Pra-Anum F.R., near Amentia, *Irvine* 465 (GC; K).

WITHOUT LOCALITY. *Farmer* 447, 448/557 (K).

Abundant in cleared areas, by roadsides and paths in the forest, and an almost constant feature of the field layer in cocoa farms.

Whilst the mature plant propagates rapidly by means of a long creeping and branching rhizome the juvenile states show approximate or even tufted fronds.

***Cyclosorus microbasis*** (Bak.), Adams & Alston, comb. nov.

*Nephrodium microbasis* Bak. in Hook. & Bak., Synops. Fil.: 496 (1874).

ASHANTI. I. Techiman, *Adams & Akpabla* 4494 (BM; GC).

In wet sandy soil near spring on hillside in the transitional forest zone; only once recorded.

The type specimen of this species has some united veins as in *Cyclosorus* and some free as in *Thelypteris*.

***Cyclosorus costularis*** (Bak.) Adams & Alston, comb. nov.

*Gymnogramme unita* Kunze in Linnaea xviii: 115 (1844); non *Cyclosorus unitus* Ching (1932).

*Goniopteris patens* Fée, Mém. Fam. Foug. v: 253 (1852); non *Cyclosorus patens* Copel. (1947).

*Goniopteris silvatica* Pappe & Rawson, Synops. Fil. Afr. Austr.: 39 (1858), nom. illegit.

*Nephrodium costulare* Bak. in Journ. Linn. Soc. Bot. xvi: 203 (1877).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 403 (BM; GC), 501 (BM; GC). Apapam, near Kibi, *Adams* 973 (GC).

Near permanent hill streams in the forest. Rather rare and so far recorded only from the one district.

***Cyclosorus quadrangularis*** (Fée) Tard. in Notul. Syst. xiv: 345 (1952).

*Nephrodium quadrangulare* Fée, Mém. Fam. Foug. v: 308 (1852).

*Nephrodium molle* sensu Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898); non Desv.

COLONY. *Western Province*: I. Near Prince's Town, *Cudjoe* 95 (GC). IV. Asuansi, *Box* 2041 (BM; GC), 2057 (BM; GC). Jakai, *Box* 2079 (BM). Kakum F.R., near Nfuom, *Box* 2865 (BM; GC). Foso-Juasoo F.R., *Scholes* 252 (BM; GC). *Eastern Province*: I. Achiasi, near Oda, *Box* 2888 (BM; GC). Puso Puso ravine, Atewa range, *Adams* 317 (BM; GC), 496 (GC). Potroasi, near Kibi, *Adams* 393 (BM; GC; K).

ASHANTI. II. Merishe, near Adiembra, *Kitson* 1225 (K). Bompata, *Vigne* 2703 (FHK). IV. Mampong, *Vigne* 4102 (FHK; K).



WITHOUT LOCALITY. *Cummins* 88 (K).

Occupying similar habitats to *C. dentatus* and frequently associated with it though less widely distributed.

**Cyclosorus striatus** (Schumach.) Copel., Gen. Fil.: 143 (1947).

*Aspidium striatum* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 230 (1829).

*Aspidium unitum* sensu Kuhn, Fil. Afr.: 143 (1868); non Mett.

*Nephrodium unitum* sensu Chipp, List Herb. Pl. G.C.: 40 (1914); non R. Br.

COLONY. *Western Province*: I. Axim, *Johnson* 994 (K); *Johnson* (?) 18/1901 (K). Brawile, near Axim, *Cudjoe* 3 (BM; GC). Atuabo, *Fishlock* 43 (K). Agona junction—Dixcove road, *Cudjoe* 51A (GC; P; US). IV. Asuansi, *Box* 2052 (BM; GC), 2086 (BM; GC). *Eastern Province*: I. Asuokaw, near Adaiso, *Adams* 519 (GC). II. Akwapim, *Thonning* (ex Schumach).

ASHANTI. I. Techiman, *Adams & Akpabla* 4519 (GC; K). II. Kumasi, *Box* 2908 (BM; GC).

A gregarious fern with a wide distribution but rather local, in habitat being mostly confined to well-lit swampy areas in the forest.

### THELYPTERIS Schmidel

**Thelypteris cruciata** (Willd.) Tard. in Notul. Syst. xv: 91 (1954).

*Aspidium cruciatum* Willd. in L., Sp. Pl., ed. 4, v: 278 (1810).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Scholes* 441 (GC); *Adams* 322 (BM; GC), 404 (GC; K), 503 (GC), 1188 (GC), 1451 (GC; P).

Rare and local in a steep forested ravine near a permanent stream.

### DENNSTAEDTIACEAE

### DENNSTAEDTIOIDEAE

### MICROLEPIA C. Presl

**Microlepia speluncae** (L.) Moore, Index Fil.: xciii (1857).

*Polypodium speluncae* L., Sp. Pl. ii: 1093 (1753).

*Davallia speluncae* (L.) Bak. in Hook. & Bak., Synops. Fil.: 100 (1867).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).—Chipp, List Herb. Pl. G.C.: 40 (1914).

COLONY. *Western Province*: I. Agona junction—Dixcove road, *Cudjoe* 51B (GC). IV. Asin—Nyankumasi, *Cummins* 172 (K). Jakai, near Fanti—Nyankumasi, *Box* 2873 (GC; BM). Asuansi, *Box* 2874 (BM; GC), 2875 (GC). *Eastern Province*: I. Achiasi, near Oda, *Box* 2887 (BM; GC). Tafo, *Darko* 162 (GC). Puso Puso ravine, Atewa range, *Adams* 407 (GC; K). II. Aburi, *Obeng* 19 (GC). Akropong, Akwapim, *Irvine* 2613 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3392 (GC). Kpeme Hill, near Ahenkro, *Adams* 1806 (GC).

ASHANTI. II. Near Bompata, *Vigne* 2702 (FHK; GC; K). Lake Bosumtwé, *Box* 2902 (BM; GC); *Adams & Akpabla* 4540 (GC). Bobiri F.R., *Adams* 544 (GC). III. Pra-Anum F.R., *Box* 2923 (BM; GC). IV. Near Mampong, *Vigne* 4098 (FHK; GC; K).

Near streams in the forest; widespread but never abundant.

### DAVALLIOIDEAE

#### DAVALLIA Sm.

**Davallia chaerophylloides** (Poir.) Steud., Nom. Bot., Pl. Crypt.: 146 (1824).

*Trichomanes chaerophylloides* Poir. in Encycl. Méth., Bot. viii: 80 (1808).

COLONY. *Western Province*: IV. Asuansi, *Box* 2065 (BM; GC), 2479 (BM). *Eastern Province*: I. Abetifi, *Irvine* 316 (GC; K); *Akpabla* 199 (GC). Birimsu, *Darko* (GC). Begoro, *Adams* 246 (GC), 434 (GC; K; P). Puso Puso ravine, Atewa range, *Adams* 332 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Scholes* 44 (BM; GC).

ASHANTI. II. Kumasi, *Vigne* 3049 (FHK; K). Jimira F.R., *Vigne* 4236 (FHK; GC; K). Agogo, *Footé* 102 (BM; GC). Bobiri F.R., *Adams & Akpabla* 4542 (GC). III. Pra-Anum F.R., *Box* 2926 (BM; GC). IV. Nsuta, near Mampong, *Vigne* 1748 (FHK; K).

Frequent on the high branches of tall trees.

### OLEANDROIDEAE

#### NEPHROLEPIS Schott

**Nephrolepis biserrata** (Sw.) Schott, Gen. Fil.: sub t. 3 (1834).

*Aspidium biserratum* Sw. in Schrad., Journ. Bot. 1800, 2: 32 (1801).

*Aspidium acutum* (Schkuhr) Krypt. Gewächse i: 32, t. 31 (1804).

*Aspidium guineense* Schumacher in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 229 (1829).

*Nephrolepis acuta* (Schkuhr) C. Presl, Tent. Pterid.: 79 (1836).—Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).

*Nephrolepis punctulata* var. *hirsuta* Mett. ex Kuhn, Fil. Afr.: 156 (1868).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K, not seen). Brawile, near Axim, *Cudjoe* 1 (GC; K), 2 (GC). II. Tarkwa, *Vigne* 4121 (FHK). IV. Nsuta, *Cummins* 39/99/182/184 (K). Asuansi, *Box* 2032 (BM). *Eastern Province*: I. Assene, *Footé* 126 (GC). Potroasi, near Kibi, *Adams* 169 (GC). II. Akwapim, *Thonning* 1 a & b (C). Aburi, *Obeng* 1 (GC); *Adams* 180 (GC), 182 (GC). Achimota (cultivated), *Irvine* 2590 (GC). III. Krobo, *Thomas* D9 (GC; K).

ASHANTI. II. Bompata, *Vigne* 2719 (FHK). Kumasi, *Vigne* 4110 (FHK; GC). Agogo, *Footé* 34 (GC). IV. Mampong, *Vigne* 4099 (FHK; K).

WITHOUT LOCALITY. *Johnson* 205 (GC).

Ubiquitous in the forest area and often outside it; the commonest fern. This fern



is most frequently found growing among the old leaf bases of oil-palms but may also be terrestrial.

*N. punctulata* var. *hirsuta* and *Aspidium guineense* are both based on Schumacher's Thonning specimen, which shows the typical hairy juvenile frond.

**Nephrolepis undulata** (Afz. ex Sw.) J. Sm. in Curt., Bot. Mag. lxxii, Comp.: 35 (bis) (1846).

*Aspidium undulatum* Afz. ex Sw. in Schrad., Journ. Bot. 1800, 2: 32 (1801).

COLONY. *Western Province*: III. Afao Hills F.R., *Adams* 1962 (GC), 2048 (GC). *Eastern Province*: I. Bunsu, *Box* 2940 (BM; GC). Begoro, *Adams* 435 (BM; GC; K; P). Near Bosuso, *Adams* 464 (BM; GC).

SOUTHERN TOGOLAND. I. Togo Plateau F.R., *St. Clair Thompson* 1525 (GC; K).

ASHANTI. I. Techiman, *Adams & Akpabla* 4481 (BM; GC). IV. Kumawu, *Irvine* 2813 (GC). Mampong scarp, *Adams & Akpabla* 4532 (BM; GC). Mampong, *Adams* 962 (GC).

Occasional as an epiphyte on oil-palms in the hilly and more northerly districts, or on roadside banks and streamsides on light sandy soils. It has been seen on planted oil-palms as far north as Wa in the west and Yendi in the east.

This species is often referred to *N. cordifolia* (L.) C. Presl, which was based on a figure of Petiver's, which is a copy of Plumier's t. 71 in his *Traité des Fougères de l'Amérique* (1705): this plate probably represents *N. occidentalis* Kunze.

### SCHIZOLOMA Gaudich.

**Schizoloma ensifolium** (Sw.) J. Sm. in Hook., Lond. Journ. Bot. iii: 414 (1841).

*Lindsaea ensifolia* Sw. in Schrad., Journ. Bot. 1800, 2: 77 (1801).

COLONY. *Western Province*: I. West bank of Ancobra R., Axim-Ancobra road, *Morton* (BM; GC).

On rotten tree-stump at edge of mangrove swamp.

### OLEANDRA Cav.

**Oleandra distenta** Kunze in Bot. Zeit. ix: 347 (1851).

COLONY. *Western Province*: IV. Asuansi, *Box* 2066 (BM; GC). *Eastern Province*: I. Puso Puso ravine, Atewa range, *Box* 3271 (BM; GC); *Adams* 502 (GC). Begoro scarp, *Box* 3447 (BM). Near Nkawkaw, *Box* 3457 (BM; GC). Atewa range, *Box* 3502 (BM; GC; K). Omenako, near Kibi, *Box* (GC). Apapam, near Kibi, *Adams* 982 (BM; GC). II. Aburi, *Adams* 987 (GC; P; US).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3400 (GC); *Scholes* 69 (BM; GC).

ASHANTI. II. Kumasi, *Irvine* 2810 (GC). Bobiri F.R., *Adams* 534 (GC; P). III. Pra-Anum F.R., *Box* 2927 (BM; GC).

Occasional as an epiphyte on the high branches of tall trees.

**Oleandra ejurana** C. D. Adams in Ann. & Mag. Nat. Hist., Ser. 12, vii: 873 (1954).

ASHANTI. IV. Ejura scarp, *Adams* GC 4561 (BM; GC); *Morton* GC 9763 (BM; GC).

**ARTHROPTERIS** J. Sm.

**Arthropteris monocarpa** (Cordem.) C. Chr. in Perrier, Cat. Pl. Madag., Ptérid.: 32 (1931).

*Nephrodium monocarpum* Cordem., Fl. Réunion: 74 (1895).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Box* 3270 (BM; GC); *Adams* 323 (GC), 408 (BM; GC; K), 568 (GC; P; US).

Recorded only from this locality, growing on rocks and the trunks of tree-ferns near a permanent stream.

**Arthropteris orientalis** (J. F. Gmel.) Posth. in Rec. Trav. Bot. Néerl. xxi: 218 (1924).

*Polypodium orientale* J. F. Gmel. in L., Syst. Nat., ed. 13, ii: 1312 (1791).

*Aspidium thonningii* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 229 (1829).—Kuhn, Fil. Afr.: 143 (1868).—Alston in Journ. of Bot. lxxvii: 287 (1939).

COLONY. *Eastern Province*: I. Ntronang, Pra River, *Box* 2893 (BM; GC). Near Bosuso, *Box* 2944 (BM; GC). Potroasi, near Kibi, *Adams* 168 (GC). Begoro, *Adams* 245 (BM; GC). II. Akwapim, *Thonning* (C). Aburi, *Johnson* 204 (GC); *Adams* 989 (GC).

ASHANTI. II. Bompata, *Vigne* 2711 (FHK). Agogo, *Foote* 103 (BM; GC). Bobiri F.R., *Adams & Akpabla* 4547 (GC); *Adams* 529 (GC), 536 (GC; P; US). III. Pra-Anum F.R., *Box* 2921 (BM). IV. Mampong scarp, *Adams & Akpabla* 4534 (GC; K).

A frequent epiphyte on the high branches of trees in the forest; less common on rocks and the trunks of oil-palms.

**Arthropteris ramosa** (Beauv.) Mett. in Reise Österr. Freg. Novara, Bot. i: 213 (1870).

*Aspidium ramosum* Beauv., Fl. Oware & Benin ii: 54, t. 91 (1821).

*Aspidium sublobatum* (Schumach.) in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 235 (1829).

*Nephrolepis ramosa* (Beauv.) Moore, Index Fil.: 102 (1858).—Kuhn, Fil. Afr.: 156 (1868).—Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).—Chipp, List Herb. Pl. G.C.: 40 (1914).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.), *Burton & Cameron* (K, not seen). Near Prince's Town, *Cudjoe* 96 (GC). IV. Asin-Nyankumasi, *Cummins* 93/134 (K). Asuansi, *Box* 2033 (BM); *Scholes* 163 (GC); *Adams* 114 (GC). *Eastern Province*: I. Anyinam, *Obeng* 10 (GC; K). Bunsu, *Foote* 109 (GC). Puso Puso ravine, Atewa range, *Box* 3269 (BM; GC); *Adams* 319 (GC). Tafo, *Darko* 198 (FHI 12928). Asiakwa, *Adams* 192 (GC). Awaham, *Adams* 523 (GC; K; P; US). II. Akwapim, *Thonning* 308 (C). Aburi, *Johnson* 451 (GC; K). Akropong, *Irvine* 2612 (GC; K).

ASHANTI. II. Abofaw, *Chipp* 536 (FHK; K). Juaso, *Irvine* 317 (GC; K). Bompata, *Vigne* 2718 (FHK). Konongo, *Darko* (GC). Bobiri F.R., *Adams & Akpabla* 4548 (GC); *Adams* 547 (GC; P; US).

A frequent scandent epiphyte on the trunks and low branches of trees in the forest.

This plant is often identified as *A. obliterated* (R. Br.) J. Sm. The type of *Nephrodium obliterated* R. Br. is a species of *Nephrolepis*, as stated by Carruthers in Seem., Fl. Vitiens.: 362 (1873).



## PTERIDOIDEAE

## PTERIDIUM Scop.

**Pteridium aquilinum** (L.) Kuhn in Decken, Reise Ost-Afr. iii, 3, Bot.: 11 (1879).

*Pteris aquilina* L., Sp. Pl. ii: 1075 (1753).

COLONY. *Western Province*: I. Mielialuma, Basakeh, near Axim, *Cudjoe* 65 (GC; P; US). *Eastern Province*: I. Near Begoro, *Adams* 462 (BM; GC; K).

SOUTHERN TOGOLAND. I. Togo Plateau F.R., *St. Clair Thompson* 1513 (GC; K). Amedjofe, *Akpabla* 859 (GC); *Box* 3434 (BM; GC); *Adams* 985 (GC).

ASHANTI. II. Near Kumasi, *Box* 2903 (BM; GC). IV. Near Mampong, *Box* 2930 (BM; GC).

A gregarious fern of secondary formations and roadsides on sandy soil; rather local but more frequent in the hilly districts.

## LONCHITIS L.

**Lonchitis currori** (Hook.) Mett. ex Kuhn in Decken, Reise Ost-Afr. iii, 3, Bot.: 10 (1879).

*Pteris currori* Hook., Sp. Fil. ii: 232, t. 140 (1858).

COLONY. *Western Province*: IV. Near Asuansi, *Box* 2051 (BM; GC), 2098 (BM; GC). Foso-Juaso F.R., *Box* 2484 (BM; GC). Kakum F.R., near Nfuom, *Box* 2851 (BM; GC), 2866 (BM; GC; K). Kakum F.R., near Krua, *Box* 2913 (BM; GC). *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 337 (BM; GC; P; US).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3393 (BM; GC).

ASHANTI. II. Near Bompata, *Vigne* 2709 (FHK; GC; K). Konongo, *Akpabla* 257 (GC; K). Bobiri F.R., *Adams* 549 (GC; K; P; US).

Locally common in damp shady places in the forest.

**Lonchitis reducta** C. Chr. in Fedde, Repert. Sp. Nov. ix: 370 (1911).

*Lonchitis pubescens* sensu Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898); non Willd.

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Basakeh, near Axim, *Cudjoe* 43 (BM; GC). II. Neung F.R., near Tarkwa, *Cudjoe* 40 (GC; K). IV. Asin-Nyankumasi, *Cummins* 110 (K). Near Asuansi, *Box* 2434 (BM; GC). Foso-Juaso F.R., *Scholes* 248 (GC; P; US).

ASHANTI. II. Bobiri F.R., *Adams* 554 (GC).

A gregarious plant of damp low-lying forest; more frequent in the western districts than *L. currori*.

## ANISOSORUS Trev. ex Maxon

**Anisosorus occidentalis** (Bak.) C. Chr., in Perrier, Cat. Pl. Madag., Ptérid.: 54 (1931).

*Lonchitis occidentalis* Bak. in Hook. & Bak., Synops. Fil.: 128 (1867).

COLONY. *Western Province*: II. Near Enchi, *Adams* 2184 (GC). III. Near Chirano, *Adams* 1982 (GC). *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 87

(BM; GC), 321 (BM; GC), 405 (GC), 413 (GC), 507 (GC; K; P; US). Chapiasi, near Kibi, *Adams 1195* (GC). Kwabeng, *Adams 2689* (GC).

ASHANTI. III. Near Fomena, *Adams 2518* (GC).

Rather rare near permanent streams.

### PTERIS L.

***Pteris acanthoneura*** Alston in Mendonça, Contrib. Conhec. Fl. Moçamb. ii: 15, t. 4, 5 (1954).

*Pteris spinulifera* sensu Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898); non Schumach.

*Pteris atrovirens* sensu Chipp, List Herb. Pl. G.C.: 40 (1914); non Willd.

*Pteris biaurita* sensu Irvine, Pl. G.C.: 356 (1930); non L.

COLONY. *Western Province*: IV. Agona-Mankrong, *Vanderpuye 8* (GC). Asuansi, *Adams 112* (GC). *Eastern Province*: I. Assene, *Foot 154* (GC). Kukna, *Bekoe* (GC). Near Suhum, *Adams 152* (GC), 383A (GC; K). Kukurantumi, *Adams 250* (GC). Begoro, *Adams 433* (GC). II. Akwapim?, *Thonning 305* (C). Afwerase Hills, Aburi, *Obeng 5B* (K). Mampong, *Foot 1* (GC).

ASHANTI. II. Bobiri F.R., *Adams & Akpabla 4545* (GC). III. Brofoyedru, *Cummins 188/1B/83* (K). Amentia, *Irvine 507* (GC; K).

Common by path-sides and in old farms in the forest.

This plant differs from *P. atrovirens* in having Campteroid venation, and in the texture, which is harder, and in being more or less glaucous. In these characters it resembles *P. mildbraedii* which is, however, larger with spinules on the stipe only. *P. mildbraedii* occupies wetter low-lying habitats. The affinity is with the latter species and not with *P. biaurita* as suggested by Bonaparte. *P. acanthoneura* also appears to differ from all other species of *Pteris* in the Gold Coast by having a more or less elongated basal lobe on the acroscopic side of the basal pinna.

There has been inevitable confusion here owing to the apparent similarity of this species and *P. atrovirens* and the fact that Schumacher's Thonning material contains a mixture of both.

***Pteris atrovirens*** Willd. in L., Sp. Pl., ed. 4, v: 385 (1810).

*Pteris spinulifera* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 233 (1829).—C. Chr., Index Fil., Suppl. iii: 168 (1934).

*Pteris atrovirens* var. *spinulifera* (Schumach.) Bonap. in Bull. Mus. Nation. Hist. Nat. Par. xix: 388 (1913).

*Pteris atrovirens* var. *inermis* Bonap., Not. Ptérid. xiv: 229 (1923).

COLONY. *Western Province*: I. Basakeh, near Axim, *Cudjoe 11* (GC; P). Agona junction-Dixcove road, *Cudjoe 52* (GC). IV. Asuansi, *Box 2034* (BM); *Adams 117* (GC). *Eastern Province*: I. Near Suhum, *Adams 383* (GC; K). Near Begoro, *Adams 431* (GC). Bunsu, *Cudjoe 84* (GC). II. Akwapim, *Thonning* (C). Afwerase Hills, Aburi, *Obeng 24* (GC). Aburi, *Adams 33* (GC), 205 (GC), 1003 (GC). III. Near Odumase, Many Krobo, *Adams 469* (GC).

SOUTHERN TOGOLAND. I. Kpandu, *Asamany 157* (GC; K). Buem, *Mischlich* (BM).

ASHANTI. II. Jimira F.R., *Vigne 3052* (FHK; GC). Fuller Falls, near Kintampo, *Adams 586* (GC).



Widely distributed and not uncommon on path-sides and in oil-palm groves in the forest.

The original description of *P. atrovirens* makes no mention of spinules, but Baker (in Hook. & Bak., Synops. Fil., ed. 2: 170 (1874)) states, 'rachis of the pinnules beneath sometimes, but not always, furnished with a row of weak prickles'; *P. spinulifera* Schumacher is cited as a synonym. Thonning's specimens in the Copenhagen collection are mixed; some show *Litobrochia* and the others *Campteria* venation. The latter are distinct and are now separated in *P. acanthoneura*. Schumacher did not distinguish venation-type in his description of *P. spinulifera*, but nevertheless all his available material was spinuliferous.

**Pteris biaurita** L., Sp. Pl. ii: 1076 (1753).

COLONY. *Eastern Province*: III. Boti, near Huhunya, *Adams* 280 (BM; GC; K).

ASHANTI. II. Asenanyo F.R., *Adams* 1942 (GC; P; US).

WITHOUT LOCALITY. *Johnson* 202 (GC).

Rare in forest country.

**Pteris burtoni** [Oliv. in Burton & Cameron, To the G.C. for Gold ii: 370 (1883), *nom. nud.*] Bak. in Ann. of Bot. v: 218 (1891).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Basakeh, near Axim, *Cudjoe* 47 (GC). Bonyere, near Axim, *Cudjoe* 58 (GC). II. Neung F.R., near Tarkwa, *Cudjoe* 24 (GC; K), 26 (BM; GC). IV. Asuansi, *Box* 2050 (BM; GC). Foso-Juaso F.R., *Box* 2067 (BM; GC); *Scholes* 247 (GC). Bimpong F.R., *Collins* (K). *Eastern Province*: I. Awisa, Akim, *Irvine* 2836 (GC). Birim River, Anyinam, *Obeng* 5A (GC). Bunsu, *Scholes* 317 (GC). Asiakwa, *Adams* 84 (GC), 1184 (GC). Puso Puso ravine, Atewa range, *Adams* 92 (GC), 315 (GC; P), 567 (GC), 570 (GC), 571 (GC). Potroasi, near Kibi, *Adams* 160 (GC). Near Apapam, near Kibi, *Adams* 972 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Scholes* 64 (BM; GC).

ASHANTI. II. Konongo, *Akpabla* 259 (GC; K), 260 (GC; K). Bobiri F.R., *Adams* 542 (GC), 551 (GC).

Frequent in the shade on path-sides and by streams in the wet forest area.

This is a polymorphic species within which several forms are recognizable. The forms show degrees of frond dissection ranging from bipinnatifid to tripinnatifid, the simplest form having the sterile frond with the lowest pinnae once-lobed on the basiscopic side, and this lobe, the median pinnae and the terminal pinna simple. The fertile fronds are almost invariably slightly more complex at corresponding stages. A form in which the simple pinnae have long continuous sori may be referable to *P. johnstoni* Bak., but the type of this species at Kew is inadequate for reliable comparison.

Intermediate forms have the pinnae very irregularly lobed, there being a marked variation in the length of adjacent lobes and occasional absence of lobes over sections of the pinna margin, especially on the acroscopic side.

The most highly developed fronds are to be found on larger, and presumably older,

plants where they resemble those of *P. atrovirens*. In such specimens the dissection is regular and tripinnatifid at the base.

Throughout this group of forms there is also considerable variation in the presence or absence of costal spinules, the prominence of veinlets, and the size of areolae. Further study is required.

*P. burtoni* is distinguished from other Gold Coast species of *Pteris*, except *P. similis*, by the invariable presence of one or more proliferating buds in the upper pinna axils. *P. similis* differs in its larger size, lighter green colour, stramineous stipe and rhachis with coarse spines, wider and more rounded sinuses, more copious roots, and in its occupation of a swampy well-lit habitat.

***Pteris mildbraedii*** Hieron. in Engl., Bot. Jahrb. liii: 415 (1915).

*Pteris biaurita* sensu Oliv. in Burton & Cameron, To the G.C. for Gold ii: 370 (1883); non L.

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Mielialuma, Basakeh, near Axim, *Cudjoe* 59 (BM; GC; P; US). IV. Foso-Juaso F.R., *Scholes* 254 (GC).

'From muddy stream-bank in virgin forest' (*Cudjoe*).

See also note under *P. acanthoneura*.

***Pteris quadriaurita*** Retz., Obs. Bot. vi: 38 (1791).—Cummins in Bull. Misc. Inf. Kew, 1898: 81 (1898).

COLONY. *Western Province*: IV. Asuansi, *Box* 2056 (BM; GC). *Eastern Province*: I. Assene, *Foote* 142 (GC). Near Begoro, *Box* 2947 (BM; GC). Potroasi, near Kibi, *Adams* 159 (GC), 163 (GC). Puso Puso ravine, Atewa range, *Adams* 329 (GC), 416 (GC). Bunsu, *Cudjoe* 78 (GC; P). II. Afwerase Hills, Aburi, *Obeng* 22 (GC; K). Akropong, *Irvine* 2614 (GC; K); *Adams* 1002 (GC). Aburi, *Box* 2879 (BM; GC). Near Mamfe, *Adams* 299 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Scholes* 66 (BM; GC). Kpandu, *Adams* 1796 (GC).

ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 587 (GC). II. Merishe, near Adiembra, *Kitson* 1226 (K). Bompata, *Vigne* 2710 (FHK). Konongo, *Akpabla* 255 (GC; K). Agogo, *Foote* 41 (GC). Lake Bosumtwe, *Adams* 95 (GC). III. Mansi Hills, *Cummins* 7B (K). Near Bekwai, *Box* 2895 (GC). IV. Mampong, *Vigne* 4101 (FHK; K).

Frequent by paths and roads in the forest, especially in the hilly districts. Apparently less common in the west.

This aggregate, as here construed, may consist of several separable species. *P. togoensis* Hieron. has been recorded near Ho, Southern Togoland I (*Schröder* 186), and may be different. Further study of this group is required.

***Pteris similis*** Kuhn in Decken, Reise Ost-Afr. iii, 3, Bot.: 21 (1879).

COLONY. *Eastern Province*: II. Aburi, *Johnson* 203 (GC; K).

SOUTHERN TOGOLAND. I. Amedjofe, *Scholes* 65 (BM).



ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 581 (GC). II. Bobiri F.R., *Adams* 555 (GC; K). III. Pra-Anum F.R., *Box* 2925 (BM; GC).

Uncommon. Near streams and in well-illuminated swampy parts of the forest. See also note under *P. burtoni*.

***Pteris tripartita*** Sw. in Schrad., Journ. Bot. 1800, 2: 67 (1801).

*Pteris marginata* Bory, Voy. Afr. i: 402 (1804).—Chipp, List Herb. Pl. G.C.: 40 (1914).

COLONY. *Western Province*: III. Near Bibiani, *Adams* 2085 (GC; P; US). *Eastern Province*: I. Kukurantumi, *Johnson* 860 (GC; K). Near Kibi, *Box* 3507 (BM; GC).

ASHANTI. II. Ahwireso, *Akpabla* 287 (GC; K). South Fomangsu F.R., *Box* 3459 (BM). Bobiri F.R., *Adams* 552 (GC; K).

A rare plant of clearings in the forest.

All plants recorded from the country show *Litobrochia* venation.

***Pteris vittata*** L., Sp. Pl. ii: 1074 (1753).

COLONY. *Western Province*: III. Bibiani, *Adams* 1927 (GC), 1945 (GC).

ASHANTI. III. Obuasi, *Adams* 2495 (BM; GC; K; P; US).

### ACROSTICHUM L.

***Acrostichum aureum*** L., Sp. Pl. ii: 1069 (1753).—Chipp, List Herb. Pl. G.C.: 39 (1914).

A. Chev., Explor. Bot. Afr. Occ. Franç.: 774 (1920).—Irvine, Pl. G.C.: 7 (1930).

COLONY. *Western Province*: I. Pra River, *Johnson* 996 (GC; K). Sekondi, *Chipp* 216 (FHK; K). Axim, *Chevalier* (P); *Irvine* 2131 (GC; K); *Cudjoe* 49 (GC; K), 75 (GC; P; US). Bonyere, near Axim, *Cudjoe* 57 (GC). Eikwe, *Cudjoe* 64 (GC). Ancobra River, *Foot* 123 (GC). Nhwini River, near Takoradi, *Box* 2076 (BM; GC). IV. Agona-Mankrong, *Vanderpuye* 4 (GC).

Locally abundant as a conspicuous member of the mangrove associations in the estuaries of the larger rivers and lagoons of the west. The record of this plant from Angona-Mankrong is worthy of special note as this is inland at least 40 km. from the nearest point on the coast. The species is also known from a fresh-water swamp a few km. south of Nsaba in the same area, and a similar locality between Adaiso and Nsawam.

### ASPLENIOIDEAE

#### ASPLENIUM L.

***Asplenium africanum*** Desv. in Mag. Ges. Naturforsch. Freunde Berl. v: 322 (1811).

*Asplenium sinuatum* Beauv., Fl. Oware & Benin ii: 33, t. 79 fig. 1 (1816); non *A. sinuatum* Salisb. (1796).—Kuhn, Fil. Afr.: 116 (1868).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).

*Asplenium guineense* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 232 (1829).

COLONY. *Western Province*: I. Mielialuma, Basakeh, near Axim, *Cudjoe* 63 (GC; P; US), 68 (GC), 72 (GC). II. Simpa, *Vigne* 2914 (FHK; K). IV. Asin-Nyankumasi,

*Cummins 61* (K). Asuansi, *Box 2072* (BM; GC), 2882 (BM; GC). *Eastern Province*: II. Akwapim, *Thonning* (C). Aburi, *Adams 990* (GC).

A rather uncommon epiphyte on forest trees and oil-palms; more prevalent in the western areas. This species is easily confused with *A. currori* and may be more common than the number of recorded specimens would suggest.

***Asplenium akimense*** C. D. Adams in *Ann. & Mag. Nat. Hist.*, Ser. 12, vii: 873 (1954).

COLONY. *Eastern Province*: I. Puso ravine, Atewa range, *Cudjoe GC 3829* (BM; GC).

***Asplenium barteri*** Hook., *Sec. Cent. Ferns*: t. 75 (1861).

*Asplenium macrophlebium* sensu Cummins in *Bull. Misc. Inf. Kew* 1898: 81 (1898).—Chipp, *List Herb. Pl. G.C.*: 39 (1914); non Bak.

COLONY. *Western Province*: II. Simpa, *Vigne 2913* (FHK; K). *Eastern Province*: I. Begoro, *Johnson 721* (GC; K); *Box 3449* (BM). Akrum River, near Begoro, *Box 2950 pro parte* (BM; GC); *Adams 425* (BM; GC; P), 455 (GC). Near Bosuso, *Box 2943 pro parte* (BM). Atewa range F.R., *Box 3504* (BM; GC). Puso Puso ravine, Atewa range, *Scholes 443* (GC); *Adams 85* (GC), 334 (GC), 410 (GC), 508 (BM; GC). II. Aburi, *Johnson 451A* (GC).

ASHANTI. III. Brofeyedru, Mansi Hills, *Cummins 3B* (K).

A low-level epiphyte on the trunks of large trees, the branches of small trees, and sometimes on rocks. Locally plentiful near streams in hilly parts of the wet forest.

This is a variable fern showing a great range in the size and shape of the pinnae.

***Asplenium buettneri*** Hieron. apud Mildbr. in *Wiss. Ergebn. Deutsch. Z.-Afr.-Exped.* ii: 23 (1910).

*Asplenium furcatum* sensu Chipp, *List Herb. Pl. G.C.*: 39 (1914); non Thunb.

COLONY. *Eastern Province*: I. Abetifi, *Scholes 107* (BM; GC). II. Road to Dodowah, Akwapim, *Johnson 590* (GC; K). Konkonura Falls, Aburi, *Johnson 993* (GC; K). Aburi, *Irvine 62* (GC; K). Mampong, Akwapim, *Box 2092* (BM; GC); *Footte 5* (GC); *Todd* (GC). III. Volta River F.R., *Adams 365* (BM; GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine 3380* (GC).

ASHANTI. II. Lake Bosumtwé, *Box 2899* (BM; GC); *Adams & Akpabla 4538* (GC; K; P; US).

A local terrestrial fern of steep rocky slopes in the forest, especially in gullies in the upland regions.

***Asplenium cuneatum*** Lam. in *Encycl. Méth.*, Bot. ii: 309 (1786).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams 330* (BM; GC). Akrum River, near Begoro, *Adams 426* (GC; P; US), 453 (GC), 457 (BM; GC; K).

Epiphytic on the trunks of trees or tree-ferns near permanent streams in virgin forest. Rare.



***Asplenium currori* Hook., Sp. Fil. iii: 82 (1860).**

COLONY. *Western Province*: IV. Foso-Juaso F.R., *Box 2070* (BM; GC). Asuansi, *Scholes 173* (GC). *Eastern Province*: I. Assene, *Footo 131* (GC). Potroasi, near Kibi, *Adams 171* (GC). Akrum River, near Begoro, *Adams 456* (GC). Apapam, near Kibi, *Adams 977* (GC; P; US). II. Near Aburi, *Johnson 206?* (K). Aburi, *Obeng 3A* (GC; K); *Akpabla 626* (GC); *Adams 179A* (GC), *210* (GC). III. Volta River F.R., *Adams 372* (GC).

ASHANTI. II. Bobiri F.R., *Adams 548* (GC). IV. Near Jamasi, *Adams & Akpabla 4529* (BM; GC; K).

A common epiphyte on the trunks and low branches of trees in the forest and sometimes on rocks.

This species is similar to *A. africanum* but differs in the stipe which is much shorter and almost obsolete, in the scales of the rhizome which have larger thin-walled cells, and in the habit of the frond, which is more elongated and less rigid, so that in life it normally hangs down, whereas that of *A. africanum* stands erect.

***Asplenium diplazisorum* Hieron. in Engl., Bot. Jahrb. xlv: 351 (1911).**

COLONY. *Eastern Province*. I. Bosuso, *Box 2943 pro parte* (BM; GC). Akrum River, near Begoro, *Box 2950 pro parte* (BM). Puso Puso ravine, Atewa range, *Box 3260* (BM; GC). Bunsu, *Thompson* (BM).

'On boulders in a forest ravine. Alt. 1200'' (Box). Very rare.

***Asplenium dregeanum* Kunze in Linnaea x: 517 (1836).**

*Asplenium brachyopterum* Kunze [op. cit. xxiii: 232 (1850) (*brachypterum*), *nom. nud.*] Houlston & Moore in *Gard. Mag. Bot.* 1851: 260 (1851).—Chipp, *List Herb. Pl. G.C.*: 39 (1914).

COLONY. *Eastern Province*: I. Mpraeso Hills, *Johnson 671* (GC; K).

SOUTHERN TOGOLAND. I. Amedjofe, *Scholes 62* (BM); *Box 3433* (BM; GC; K).

ASHANTI. I. Adamsu, *Vigne 3517* (FHK; GC).

An epiphyte on trees and rocks at altitudes approaching and over 600 m.

***Asplenium emarginatum* Beauv., Fl. Oware & Benin ii: 6, t. 61 (1808).**

COLONY. *Eastern Province*: II. Aburi Hills, *Johnson 207* (GC). Mampong, Akwapim, *Box 2089* (BM; GC), *3275* (BM; GC); *Footo 2-4* (GC); *Darko* (GC). Nsawam-Aburi road, Akwapim, *Box 2878* (BM; GC). III. Peji Hill, Anum, *Adams 141* (GC; K). Volta River F.R., *Adams 373* (BM; GC), *517* (GC). Near Anyaboni, Dawa, *Adams 1000* (GC).

ASHANTI. III. Pra-Anum F.R., *Box 2928* (BM; GC).

Locally common among rocks in leafy soil on slopes in the forest or in dry woods in the zone transitional to savannah.

This species is a conspicuous member of an association of small terrestrial ferns found in such places, including *Pellaea doniana*, *Doryopteris concolor*, *Asplenium buettneri*, *Asplenium currori* (on rocks) and *Adiantum* spp.

**Asplenium formosum** Willd. in L., Sp. Pl., ed. 4, v: 329 (1810).

COLONY. *Eastern Province*: I. Abetifi, *Scholes* 106 (BM; GC).

SOUTHERN TOGOLAND. I. Togo Plateau F.R., *St. Clair Thompson* 1635 (GC). Amedjofe, *Irvine* 3343 (GC; K). Kpeme Hill, near Ahenkro, *Adams* 1811 (GC).

ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 585 (GC; P; US). II. Agogo, *Foote* 33 (BM).

Local on mossy rocks and the trunks of trees at higher elevations in the forest to savannah transitional zone and the more northerly parts of the forest.

**Asplenium geppii** Carruth. in Cat. Afr. Pl. Welw. ii: 269 (1901).

COLONY. *Eastern Province*: I. Akrum River, near Begoro, *Adams* 428 (GC), 452 (BM; GC; K). Near Apapam, near Kibi, *Adams* 978 (GC; US).

Rare and local. Epiphytic on tree-trunks in humid sheltered places above 300 m.

**Asplenium hemitomum** Hieron. in Engl., Bot. Jahrb. xlv: 365 (1911).

COLONY. *Western Province*: IV. Kakum F.R., *Box* 2863 (BM; GC). *Eastern Province*: I. Begoro, *Irvine* 1351 (K); *Adams* 242 (BM; GC; K), 448 (GC), 458 (GC). Akrum River, near Begoro, *Box* 2946 (BM); *Adams* 429 (GC). II. Aburi, *Box* 2087 (BM; GC); *Adams* 177 (GC).

ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 582 (GC). II. Kwabia, *Vigne* 4018 (FHK; K). Ofinso, *Cox* 1 (K). III. Pra-Anum F.R., *Box* 2922 (BM; GC).

An epiphyte on the trunks and low branches of trees and sometimes on rocks in damp places in the forest. Widely distributed but nowhere common.

**Asplenium megalura** Hieron. apud Mildbr. in Wiss. Ergebn. Deutsch. Z.-Afr.-Exped. ii: 17 (1910).

COLONY. *Eastern Province*: I. Apapam, near Kibi, *Adams* 969 (BM; GC; P), 981 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3395 (GC).

A rare epiphyte in wet hilly districts.

**Asplenium paucijugum** Ballard in Hook., Ic. Pl. xxxiii: t. 3287 (1935).

COLONY. *Western Province*: II. Neung F.R., near Tarkwa, *Cudjoe* 22 (BM; GC; K). IV. Asuansi, *Box* 2036 (BM; GC), 2095 (BM; GC). *Eastern Province*. I. Pusso Pusso ravine, Atewa range, *Box* 3261 (BM).

ASHANTI. II. Near Bompata, *Vigne* 2712 (FHK; K). Bobiri F.R., *Adams* 546 (GC; P; US).

WITHOUT LOCALITY. *Scholes* 343 (BM; GC).

Terrestrial or epiphytic on the roots of shrubs and trees in damp shady places in the forest. Rather local.

This fern is indistinguishable from *A. variable* in the juvenile simple-fronded state, except that the uncurling frond has more paleae which are early caducous, and the base of the lamina is more truncate and less decurrent on the stipe. *A. variable* never has pinnate fronds whereas the mature fruiting fronds of *A. paucijugum* are nearly always pinnate.



**Asplenium suppositum** Hieron. in Engl., Bot. Jahrb. xlv: 353 (1911).

COLONY. *Eastern Province*: I. Near Begoro, *Box 3448* (BM; GC; K). III. Near Otrokpe, *Adams 563* (GC; P; US).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine 3347* (GC).

ASHANTI. II. Agogo, *Adams 2709* (GC).

A rare species usually epiphytic but sometimes on rocks in the forest.

**Asplenium unilaterale** Lam. in Encycl. Méth., Bot. ii: 305 (1786).

COLONY. *Western Province*: II. Boin River F.R., *Adams 2143* (GC). Near Enchi, *Adams 2159* (GC). III. Near Chirano, *Adams 1981* (GC). *Eastern Province*: I. Kibi, *Johnson 260* (GC; K). Ntronang, Pra River, *Box 2894* (BM; GC). Puso Puso ravine, Atewa range, *Box 3268* (BM; GC), *3463* (BM; GC); *Adams 88* (GC), *326* (GC; K; P; US). Near Asiakwa, *Adams 193* (GC).

ASHANTI. II. South Fomangsu F.R., *Box 3460* (BM; GC). III. Near Fomena, *Adams 2514* (GC; US).

Terrestrial, creeping on banks, or on rocks in very damp shady places. Locally abundant.

**Asplenium variabile** Hook., Sp. Fil. iii: 93, t. 185 (1860).

*Asplenium efulense* Bak. in Bull. Misc. Inf. Kew 1901: 137 (1901).—Irvine, Pl. G.C.: 43 (1930).

COLONY. *Western Province*: I. Mielialuma, Basakeh, near Axim, *Cudjoe 69* (BM; GC), *70* (GC), *71* (GC). IV. Kakum River, Asuansi, *Box 2084* (BM; GC), *2085* (BM; GC). Near Asuansi, *Box 2433* (BM; GC). *Eastern Province*: I. Near Bosuso, *Box 2942* (BM; GC). Bunsu, *Box 3468* (GC); Puso Puso ravine, Atewa range, *Adams 327* (GC), *333* (BM; GC; P; US), *411* (BM; GC; K), *498* (GC). Near Begoro, *Adams 451* (GC).

ASHANTI. II. Asenanyo F.R., *Adams 1933* (GC). III. Amentia, *Irvine 461* (K).

Epiphytic on the roots of trees or on rocks near streams in the forest. Local but occasionally abundant.

## LOMARIOPSIDOIDEAE

### BOLBITIS Schott

**Bolbitis acrostichoides** (Afz. ex Sw.) Ching in C. Chr., Ind. ex Fil., Suppl. iii: 47 (1934).

*Hemionitis acrostichoides* Afz. ex Sw. in Schrad., Journ. Bot. 1800, 2: 17 (1801).

COLONY. *Western Province*: IV. Kakum F.R., near Nfuom, *Box 2853* (BM; GC), *2859* (BM; GC), *2864* (BM; GC), *2867* (BM; GC). *Eastern Province*: I. Begoro, *Irvine 1179* (GC); *Adams 427* (GC; K; P). Puso Puso ravine, Atewa range, *Adams 76* (GC), *93* (GC), *1189* (GC).

SOUTHERN TOGOLAND. I. Kpeme Hill, near Ahenkro, *Adams 1805* (GC). Waribo mountain, north of Wurupong, *Adams 1846* (GC).

ASHANTI. II. Agogo, *Foot 104* (GC). IV. Mampong, *Vigne 4104* (FHK; K); *Box 2906* (BM; GC).

WITHOUT LOCALITY. *Darko 6-8* (GC).

Not uncommon among rocks and stones near streams in the forest.

**Bolbitis auriculata** (Lam.) Alston in Journ. of Bot. lxxii, Suppl. 2: 3 (1934).

*Acrostichum auriculatum* Lam. in Encycl. Méth., Bot. i: 36 (1783).

*Acrostichum punctulatum* Sw. in Schrad., Journ. Bot. 1800, 2: 12 (1801).—Cummins in Bull. Misc. Inf. Kew 1898: 82 (1898).

COLONY. *Western Province*: I. Basakeh, near Axim, *Cudjoe* 19 (GC; K; P; US). Near Prince's Town, *Cudjoe* 92 (GC). IV. Asin-Nyankumasi, *Cummins* 70/231 (K). Near Asuansi, *Box* 2431 (BM; GC), 2857 (BM). Kakum River, Asuansi, *Box* 2478 (BM; GC); *Scholes* 176 (GC). Foso-Juaso F.R., *Scholes* 257 (BM). *Eastern Province*: I. Bunsu, *Foot* 114 (GC); *Scholes* 323 (GC); *Cudjoe* 82 (GC). Achiasi, near Oda, *Box* 2889 (BM). Puso Puso ravine, Atewa range, *Adams* 86 (GC), 320 (GC). Potroasi, near Kibi, *Adams* 156 (GC). Near Asiakwa, *Adams* 1182 (GC). II. Aburi and Obosumasi, *Johnson* 210 (GC). Akropong, *Irvine* 2615 (GC; K).

SOUTHERN TOGOLAND. I. Amedjofe, *Scholes* 67 (BM; GC).

ASHANTI. II. Bompata, *Vigne* 2713 (FHK; K). Bobiri F.R., *Adams & Akpabla* 4544 (GC), 4546 (GC); *Adams* 533 (GC). III. Bekwai-Manso Nkwanta road, *Box* 2910 (BM).

Common in the wetter parts of the forest in deep leafy soil in shade.

**Bolbitis fluviatilis** (Hook.) Ching in C. Chr., Index Fil., Suppl. iii: 48 (1934).—Alston in Journ. of Bot. lxxvii: 284 (1939).

*Acrostichum fluviatile* Hook., Sp. Fil. v: 274 (1864).—Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.), *Burton & Cameron* (K). *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 331 (BM; GC), 415 (BM; GC; K; P; US), 1190 (GC).

Rare on rocks in permanent streams in the forest.

**Bolbitis gemmifera** (Hieron.) C. Chr., Index Fil., Suppl. iii: 48 (1934).

*Leptochilus gemmifer* Hieron. in Engl., Bot. Jahrb. xlv: 345 (1911).

COLONY. *Western Province*: I. Basakeh, near Axim, *Cudjoe* 45 (GC; K; P; US). IV. Foso-Juaso F.R., *Box* 2068 (BM; GC); *Scholes* 257A (GC). Asuansi, *Box* 2883 (BM; GC); *Scholes* 151 (GC). *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 316 (GC). Apapam, near Kibi, *Adams* 979 (GC). II. Mampong, *Foot* 2 (BM).

SOUTHERN TOGOLAND. I. Waribo mountain, north of Wurupong, *Adams* 1820 (GC).

ASHANTI. II. Agogo, *Foot* 107 (BM). Bobiri F.R., *Adams* 553 (GC).

Occasional by paths in the forest.

**Bolbitis heudelotii** (Bory ex Fée) Alston in Journ. of Bot. lxxii, Suppl. 2: 3 (1934); op. cit. lxxvii: 285 (1939).

*Gymnopteris heudelotii* Bory ex Fée, Acrost: 84, t. 45 (1845).

COLONY. *Western Province*: I. Basakeh, near Axim, *Cudjoe* 13 (GC; K; P; US). IV. Kakum River, Asuansi, *Box* 2082 (BM; GC), 2083 (BM; GC); *Scholes* 183 (GC). *Eastern Province*: I. Atewa range, *Vigne* 4333 (FHK). Achiasi, near Oda, *Box* 2892 (BM; GC). Sapong River, Awaham, *Adams* 518 (GC; K; P; US).



SOUTHERN TOGOLAND. I. Buem, *Mischlich* (BM).

ASHANTI. I. Near Kintampo, *Dalziel* 73 (K). Fuller Falls, near Kintampo, *Adams* 577 (GC).

Widely distributed but confined to rocks in streams in well-lit places.

***Bolbitis salicina*** (Hook.) Ching in C. Chr., Index Fil., Suppl. iii: 50 (1934).

COLONY. *Western Province*: III. Near Chirano, *Adams* 1978 (BM; GC; K; P; US).

### • LOMARIOPSIS Fée

***Lomariopsis guineensis*** (Underw.) Alston in Journ. of Bot. lxxii, Suppl. 2: 5 (1934).

*Acrostichum sorbifolium* sensu Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883); non L.—Cummins in Bull. Misc. Inf. Kew 1898: 82 (1898).

*Stenochlaena guineensis* Underw. in Bull. Torr. Bot. Club xxxiii: 46, fig. 3 (1906).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Near Axim, *Irvine* 2241 (GC; K). Abra, near Axim, *Box* 2871 (BM; GC); Mielialuma, Basakeh, near Axim, *Cudjoe* 61 (GC; P; US). IV. Asin-Nyankumasi, *Cummins* 221 (K). Asuansi, *Box* 2035 (BM; GC); *Scholes* 149 (GC), 155 (GC), 156 (GC), 182 (GC), 215 (GC), 276 (BM). Foso, *Box* 2880 (BM; GC). Kakum F.R., near Krua, *Box* 2916 (BM; GC). Foso-Juaso F.R., *Scholes* 250 (GC). Kakum F.R., near Nfuom, *Box* 2937 (GC; K). *Eastern Province*: I. Kibi, *Johnson* 243 (K). Anyinam, *Obeng* 14 (GC). Bunsu, *Irvine* 3017 (GC); *Footte* 116 (GC). Nkwanta, near Oda, *Box* 2891 (BM). Near Asiakwa, *Adams* 1183 (GC).

SOUTHERN TOGOLAND. I. Kabo River F.R., *St. Clair Thompson* 1695 (GC).

ASHANTI. II. Near Bompata, *Vigne* 2714 (FHK; GC). Bobiri F.R., *Adams* 527 (GC), 535 (GC), 550 (GC). III. Near Bekwai, *Box* 2896 (BM; GC). Bekwai-Manso Nkwanta road, *Box* 2909 (BM; GC).

WITHOUT LOCALITY. *Fishlock* (K).

Common in low-lying parts of the wet forest climbing on the stems of shrubs and young trees.

***Lomariopsis palustris*** (Hook.) Mett. ex Kuhn, Fil. Afr.: 53 (1868).

*Acrostichum palustre* Hook., Sp. Fil. v: 214 (1864).

COLONY. *Western Province*: II. Neung F.R., near Tarkwa, *Cudjoe* 25 (GC). IV. Kakum River, Asuansi, *Box* 2482 (BM; GC), 2884 (BM). Asuansi, *Scholes* 162 (GC), 181 (GC); *Adams* 113 (GC). *Eastern Province*: I. Near Asiakwa, *Adams* 194 (BM; GC). Puso Puso ravine, Atewa range, *Adams* 328 (GC), 499 (GC; K).

ASHANTI. II. Asenanyo F.R., *Adams* 1932 (GC).

Rather rare on rocks near permanent streams and occasionally on the stems of shrubs or trees in very wet places in the forest.

Unless fertile fronds are present this species is almost indistinguishable from juvenile plants, or basal branches from old plants, of *L. guineensis*.

***Lomariopsis rossii*** Holtt. in Bull. Misc. Inf. Kew, 1939: 625 (1939).

COLONY. *Western Province*: I. Mielialuma, Basakeh, near Axim, *Cudjoe* 59B (GC), 62 (GC), 67 (GC; P; US). IV. Asuansi?, *Scholes* 216 (GC). Foso-Juaso F.R., *Scholes*

249 (GC). Kakum F.R., near Nfuom, *Box* 2938 (BM; GC), 2938A (BM; GC). *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 74 (BM; GC), 1191 (GC).

Occupying similar habitats to *L. guineensis* but much less common.

*L. rossii* is readily distinguished from the other species by the winged rhachis and pinnate juvenile fronds. This fern is very rare in fruit and has been collected only once in this condition in the Gold Coast. The fruiting frond is like that of *L. guineensis*, the wing of the rhachis being very narrow.

## TECTARIOIDEAE

### CTENITIS C. Chr.

**Ctenitis cirrhosa** (Schumach.) Copel., Gen. Fil.: 124 (1947).

*Aspidium cirrhosum* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 231 (1829).—Kuhn, Fil. Afr.: 127. (1868).

COLONY. *Western Province*: IV. Asuansi, *Box* 2876 (BM; GC). Kakum F.R., near Krua, *Box* 2917 (BM; GC). *Eastern Province*: I. Bunsu, *Scholes* 326 (BM); *Cudjoe* 81 (GC; US). Puso Puso ravine, Atewa range, *Adams* 494 (GC; K; P). II. Akwapim, *Thonning* (ex Schumach.).

ASHANTI. II. Bobiri F.R., *Adams* 532 (GC; P).

An uncommon terrestrial fern in the undergrowth of wet forest.

**Ctenitis currori** (Mett.) Tard. in Notul. Syst. xiv: 342 (1952).

*Aspidium currori* Mett. in Kuhn, Fil. Afr.: 130 (1868).

Var. **currori**.

COLONY. *Western Province*: III. Near Chirano, *Adams* 1986 (GC). *Eastern Province*: I. Kibi, *Johnson* 247 (G.C.); *Adams* 1186 (G.C.). Near Bosuso, *Box* 2945 (BM; GC). Puso Puso ravine, Atewa range, *Box* 3264 (BM; GC); *Adams* 80 (BM; GC), 313 (BM; GC; K), 335 (BM; GC). Between Abempe and Adawsoasi, *Todd* (GC). Near Potroasi, near Kibi, *Adams* 166 (BM; GC), 392 (GC). Near Begoro, *Adams* 461 (GC).

ASHANTI. II. South Fomangsu F.R., *Adams* 2653 (GC).

Remarkably local in occurrence but occasionally abundant in undergrowth and along paths in the forest of the Atewa range and neighbouring hills.

Var. **tomentella** (C. Chr.), Adams & Alston, comb. nov.

*Dryopteris tomentella* C. Chr., Index Fil.: 298 (1905).

COLONY. *Eastern Province*: I. Atewa range, *Box* 3505A (BM; GC). Puso Puso ravine, Atewa range, *Adams* 509 (GC).

'On steep bank by path in forested ravine. Alt. 425 m.' (Adams). Rare.

**Ctenitis jenseniae** (C. Chr.) Tard. in Notul. Syst. xiv: 342 (1952).

*Dryopteris jenseniae* C. Chr. in Dansk Bot. Ark. ix, 3: 63 (1937).

COLONY. *Western Province*: I. Near Basakeh, near Axim, *Cudjoe* 42 (GC). Brawile, near Axim, *Cudjoe* 38 (GC). Axim-Agona junction road, *Cudjoe* 55A (GC). II. Neung F.R., near Tarkwa, *Cudjoe* 21 (GC), 41 (GC). Mpesem F.R. near Prestea, *Cudjoe* 29 (GC; K; P; US). IV. Foso-Juaso F.R., *Box* 2069 (BM; GC), 2485 (BM; GC); *Scholes* 253 (GC), 255 (GC). Near Asuansi, *Box* 2097 (BM), 2435 (GC). Kakum F.R.,

near Nfuom, *Box 2868 pro parte* (BM). *Eastern Province*: I. Near Asiakwa, *Adams 196* (GC), *200* (GC). Puso Puso ravine, Atewa range, *Adams 572* (GC).

ASHANTI. II. Near Bompata, *Vigne 2707* (FHK; K).

Locally common in damp low-lying places in the forest.

**Ctenitis lanigera** (Mett.) Tard. in Notul. Syst. xiv: 343 (1952).

*Aspidium lanigerum* Mett. in Kuhn, Fil. Afr.: 135 (1868).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Box 3267* (BM; GC); *Adams 81* (BM; GC). Near Potroasi, near Kibi, *Adams 154* (BM; GC), *155* (GC).

SOUTHERN TOGOLAND. I. Buem, *Mischlich* (BM). Amedjofe, *Irvine 3394* (GC).

ASHANTI. III. Near Fomena, *Adams 2499* (GC).

Rather rare on clay banks and by path sides in the forest.

**Ctenitis protensa** (Afz. ex Sw.) Copel., Gen. Fil.: 124 (1947).

*Aspidium protensum* Afz. ex Sw. in Schrad., Journ. Bot. 1800, 2: 36 (1801).—Kuhn, Fil. Afr.: 139 (1868).

*Aspidium subquinguefidum* Beauv., Fl. Oware & Benin 1: 34, t. 19 (1805).

*Polypodium pubescens* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 227 (1829).

*Nephrodium subquinguefidum* (Beauv.) Hook., Sp. Fil. iv: 130 (1862).—Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).—Chipp, List Herb. Pl. G.C.: 40 (1914).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Benyimade, near Axim, *Cudjoe 9* (GC; K; P; US). Axim-Agona junction road, *Cudjoe 55B* (GC). IV. Asuansi, *Box 2040* (BM; GC); *Scholes 230* (GC). *Eastern Province*: I. Assene, *Foote 117* (GC). Bunsu, *Foote 113* (GC). Puso Puso ravine, Atewa range, *Adams 314* (BM; GC), *417* (GC). Near Potroasi, near Kibi, *Adams 391* (GC). Near Apapam, near Kibi, *Adams 974* (GC). II. Akwapim, *Thonning 301* (C). Mampong, Akwapim, *Foote 8* (GC). Near Aburi, *Obeng 23* (K); *Adams 178* (BM; GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine 3396* (GC).

ASHANTI. II. Konongo, *Akpabla 256* (GC; K). Agogo, *Foote 105* (GC).

A fairly common terrestrial fern in the forest.

**Ctenitis securidiformis** (Hook.) Copel., Gen. Fil.: 125 (1947).

*Nephrodium subquinguefidum* var. *securidiforme* Hook., Sp. Fil. iv: 130 (1862).

*Aspidium securidiforme* (Hook.) Mett. in Kuhn, Fil. Afr.: 141 (1868).

COLONY. *Western Province*: IV. Kakum F.R., near Nfuom, *Box 2860* (BM; GC), *2868 pro parte* (BM; GC). *Eastern Province*: I. Begoro Hills, *Johnson 722* (GC; K). Near Bosuso, *Box 2941* (BM; GC). Puso Puso ravine, Atewa range, *Scholes 442* (BM; GC). Atewa range, *Box 3505* (BM; GC). Near Asiakwa, *Adams 186* (GC), *189* (GC).

Uncommon. Near permanent streams and in damp shady places in the forest.

**Ctenitis variabilis** (Hook.) Tard. in Notul. Syst. xiv: 343 (1952).

*Nephrodium variabile* Hook., Sp. Fil. iv: 140 (1862).—Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).—Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).



**Var. *variabilis*.**

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Near Axim, *Irvine* 2306 (GC; K). Basakeh, near Axim, *Cudjoe* 12 (GC). Near Prince's Town, *Cudjoe* 93 (GC). II. Mpesem F.R., near Prestea, *Cudjoe* 31 (GC). Neung F.R., near Tarkwa, *Cudjoe* 32 (GC). IV. Brofoyedru, Mansi Hills, *Cummins* 4B (K). Kakum F.R., near Nfuom, *Box* 2852 (BM; GC), 2869 (BM; GC). Asuansi, *Box* 2049 (BM; GC); *Scholes* 216A (GC). Foso-Juaso F.R., *Box* 2486 (BM; GC). *Eastern Province*: I. Nkwanta, near Oda, *Box* 2890 (BM; GC). Near Asiakwa, *Adams* 185 (GC), 1181 (GC). Bunsu, *Adams* 1765 (GC).

ASHANTI. II. Near Bompata, *Vigne* 2704 (FHK; K). South Fomangsu F.R., *Adams* 2539 (GC), 2649 (GC).

Common in damp low-lying places in the forest.

**Var. *speciosa* (Mett. ex Ettingsh.) Adams & Alston, comb. nov.**

*Aspidium speciosum* Mett. ex Ettingsh., *Farnkr.*: 180, t. 106 fig. 12, t. 109 fig. 10, t. 110 fig. 8 (1865).—Mett. in Kuhn, *Fil. Afr.*: 142 (1868).

*Ctenitis fraterna* Tard., *tom. cit.*: 342 (1952) excl. syn.

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 79 (GC), 506 (GC), 1187 (GC), 1454 (BM; GC). Near Potroasi, near Kibi, *Adams* 157 (BM; GC).

A rare fern of path-side banks and roadsides in the wettest parts of the forest.

**TECTARIA Cav.**

***Tectaria angelicifolia*** (Schumach.) Copel. in *Philipp. Journ. Sci.* ii, C: 410 (1907).

*Polypodium angelicaefolium* Schumach. in *Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh.* iv: 228 (1829).

*Phegopteris angelicaefolia* (Schumach.) Mett. ex Kuhn, *Fil. Afr.*: 121 (1868).

*Polypodium cameroonianum* sensu Cummins in *Bull. Misc. Inf. Kew* 1898: 81 (1898); non Hook.

*Aspidium cicutarium* sensu Irvine, *Pl. G.C.*: 42 (1930); non Sw.

COLONY. *Western Province*: I. Basakeh, near Axim, *Cudjoe* 46 (GC; K; P). IV. Asin-Nyankumasi, *Cummins* 94 (K). Asuansi, *Box* 2039 (BM; GC), 2048 (BM; GC), 2436 (BM; GC). Agona-Mankrong, *Vanderpuye* 1 & 3 (GC). *Eastern Province*: I. Birim River, Anyinam, *Obeng* 9 (GC; K). Bunsu, *Foote* 112 (GC); *Cudjoe* 83 (GC). Asiakwa, *Adams* 82 (BM; GC). Begoro, *Adams* 430 (GC). II. Akwapim, *Thonning* (ex Schumach.). Afwerase Hills, Aburi, *Obeng* 9A (GC). Near Adaiso, *Adams* 223 (BM; GC). III. Chenedom, *Thomas* D56 (GC; K).

ASHANTI. II. Bompata, *Vigne* 2706 (FHK; K). Agogo, *Foote* 106 (BM; GC). III. Amentia, *Irvine* 464 (K). Pra River, near Prasu, *Fishlock* 46 (K). IV. Mampong, *Vigne* 4103 (FHK; GC; K).

Common throughout the forest; a conspicuous member of the field layer in cocoa farms.

***Tectaria buchholzii*** (Kuhn) Copel. in *Phil. Journ. Sci.* xxxviii: 138 (1929).

*Aspidium buchholzii* Kuhn in *Deck., Reis. Ost-Afr.* iii, 3, *Bot.*: 47 (1879).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Mielialuma, Basakeh, near Axim, *Cudjoe* 108 (BM; GC).

WITHOUT LOCALITY. *Plumptre* 85 (K?, not found).

This fern is apparently rare and local in the south-western Gold Coast.

**Tectaria fernandensis** (Bak.) C. Chr., Index Fil., Suppl. iii: 179 (1934).

*Polypodium fernandense* Bak. in Ann. of Bot. v: 462 (1891).

COLONY. *Western Province*: II. Near Enchi, *Adams* 2181 (GC). III. Afao Hills F.R., *Adams* 2046 (GC). *Eastern Province*: I. Begoro?, *Irvine* 1166 (GC). Begoro, *Adams* 244 (BM; GC), 454 (GC). Puso Puso ravine, Atewa range, *Box* 3259 (BM; GC); *Adams* 318 (BM; GC), 336 (BM; GC), 338 (BM; GC). Near Asiakwa, *Adams* 188 (BM; GC), 190 (GC). Apapam, near Kibi, *Adams* 968 (GC; P; US). Chapiasi, near Kibi, *Adams* 1196 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3374 (GC). Near Vane, *Adams* 984 (GC).

ASHANTI. II. Merishe, near Adiembra, *Kitson* 1220 (K). III. Bekwai-Manso Nkwanta road, *Box* 2911 (BM; GC).

Not uncommon in the hilly districts in shaded places.

## ATHYRIOIDEAE

### DIPLAZIUM Sw.

**Diplazium hylophilum** (Hieron.) C. Chr., Index Fil.: 233 (1905).

*Asplenium hylophilum* Hieron. in Engl., Pflanzenw. Ost-Afr. C: 84 (1895).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Box* 3263 (GC); *Adams* 75 (BM; GC), 406 (GC), 505 (BM; GC; K; P).

Recorded only from this locality. In deep shade near a permanent stream at 360 m. altitude.

**Diplazium proliferum** (Lam.) Kaulf., Enum. Fil.: 182 (1824).

*Asplenium proliferum* Lam. in Encycl. Méth., Bot. ii: 307 (1786).—Kuhn, Fil. Afr.: 112 (1868).

*Diplazium incisum* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 232 (1829).

*Diplazium serratum* Schumach., tom. cit.: 233 (1829).

*Asplenium sylvaticum* sensu Chipp, List Herb. Pl. G.C.: 40 (1914); non C. Presl.

*Diplazium silvaticum* sensu Irvine, Pl. G.C.: 164 (1930); non Sw.

COLONY. *Western Province*: IV. Near Asuansi, *Box* 2045 (BM; GC), 2858 (BM; GC). Kakum F.R., near Krua, *Box* 2914 (BM; GC). *Eastern Province*: I. Kibi, *Johnson* 244 (GC; K). Begoro, *Irvine* 1170 (GC). Near Oda, *Box* 2886 (BM; GC). Puso Puso ravine, Atewa range, *Scholes* 449 (BM; GC). Tafo?, *Darko* 164 (GC). Near Asiakwa, *Adams* 187 (GC). Bunsu, *Cudjoe* 80 (GC). II. Akwapim, *Thonning* (C, type of *D. incisum*). Akwapim?, *Thonning* (ex Schumach., type of *D. serratum*).

ASHANTI. I. Fwirem, *Chipp* 455 (FHK; K). II. Merishe, near Adiembra, *Kitson* 1221 (K). Near Bompata, *Vigne* 2716 (FHK; GC; K). Juaso, *Akpabla* 238 (GC; K). Bobiri F.R., *Adams* 543 (GC; K; P; US). III. Amentia, *Irvine* 439 (K).

Common in low-lying swampy places in the forest.

**Diplazium sammatii** (Kuhn) C. Chr., Index Fil.: 238 (1905).

*Asplenium sammatii* Kuhn in Decken, Reise Ost-Afr. iii, 3, Bot.: 34 (1879).

COLONY. *Western Province*: I. Basakeh, near Axim, *Cudjoe* 17 (GC). II. Neung F.R., near Tarkwa, *Cudjoe* 27 (GC; K; P; US). IV. Kakum River, Asuansi, *Box* 2055 (BM; GC), 2881 (BM; GC); *Adams* 118 (BM; GC).

Local on the sandy banks of sluggish streams in the forest.

**Diplazium welwitschii** (Hook.) Diels in Engl. & Prantl, Nat. Pflanzenfam. i, 4: 226 (1899).

*Asplenium welwitschii* Hook. in Hook. & Bak., Synops. Fil.: 235 (1867).

COLONY. *Eastern Province*: I. Puso Puso ravine, Atewa range, *Adams* 90 (BM; GC), 94 (GC), 412 (BM; GC; K; P; US). Potroasi, near Kibi, *Adams* 158 (BM; GC).

ASHANTI. II. Bobiri F.R., *Adams* 528 (GC).

Rare in damp shady places in the forest.

## ADIANTACEAE

### GYMNOGRAMMOIDEAE

#### CERATOPTERIS Brongn.

**Ceratopteris cornuta** (Beauv.) Lepr. in Ann. Sci. Nat. xix: 103, t. 4 A (1830).

*Pteris cornuta* Beauv., Fl. Oware & Benin i. 63: t. 37 fig. 2 (1809).

*Ceratopteris thalictroides* sensu Irvine, Pl. G.C.: 95 (1930); non Brongn.

COLONY. *Western Province*: IV. Asuansi, *Box* 2044 (BM; GC); *Scholes* 197 (GC). Fanti-Nyankumasi, *Scholes* 281 (GC). *Eastern Province*: I. Near Oda, *Box* 2932 (BM; GC). II. Aburi?, *Howes* 1125 (GC). Aburi, *Irvine* 1002 (GC).

ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 578 (GC).

WITHOUT LOCALITY. *Darko* (GC).

Occasional in streams and pools in open places mainly in the forest area.

#### PITYROGRAMMA Link

**Pityrogramma calomelanos** (L.) Link, Handb. Erkenn. Gewächs. iii: 20 (1833) (err. typogr. *calomelas*).

*Acrostichum calomelanos* L., Sp. Pl. ii: 1072 (1753).

*Ceropteris calomelanos* (L.) Underw. in Bull. Torr. Bot. Club xxix: 632 (1902).—Irvine, Pl. G.C.: 96 (1930).

COLONY. *Western Province*: I. Ancobra River, Axim, *Irvine* 2142 (GC; K). Axim, *Foote* 121 (GC). Benyimade, near Axim, *Cudjoe* 14 (GC; K), 39 (GC; P; US). II. Tarkwa, *Vigne* 4119 (FHK; GC). Prestea, *Cudjoe* 30 (GC). IV. Asuansi, *Box* 2054 (BM), 2875 (BM). Abura Dunkwa, *Box* 2061 (BM; GC). Agona-Mankrong, *Vanderpuye* 11 (GC). *Eastern Province*: I. Brenase, *Irvine* 551 (GC; K). Juaso, Atewa range, *Todd* (GC). II. Achimota (cultivated), *Irvine* 2113 (GC). Aburi, *Obeng* 11 (GC).

ASHANTI. II. Merishe, near Adiembra, *Kitson* 1222 (K). Bompata, *Vigne* 2717 (FHK; K). III. Obuasi, *Vigne* (coll. Andoh) 4215 (FHK; K).

Common in roadside ditches and by streams in the forest.



Though this species is common it has undoubtedly been introduced at some time and never forms part of the natural vegetation. It is rarely found far from roads, farms or habitations. It is a native of tropical America but is now widespread in the Old World.

### ADIANTUM L.

**Adiantum caudatum** L., Mant. Pl. Alt.: 308 (1771).

COLONY. *Eastern Province*: III. Bame Pass, *Adams & Akpabla* 4001 (BM; GC; K; P; US). Krobo Hill, *Akpabla* (GC).

SOUTHERN TOGOLAND. I. Kpandu, *Asamany* 145 (GC; K).

ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 589 (GC).

On sandy or rocky banks in the dry marginal forest area.

**Adiantum confine** Fée, Mém. Fam. Foug. x: 14, t. 32, fig. 1 (1865).

COLONY. *Eastern Province*: I. Nkwantanang, near Abetifi, *Scholes* 124 (BM; GC). III. Peki, *Scholes* 136 (GC). Labolabo, *Scholes* (GC). Volta River F.R., *Adams* 369 (BM; GC), 991 (GC; P; US).

SOUTHERN TOGOLAND. I. Akpafu, *Scholes* 35B (GC).

ASHANTI. II. Agogo, *Adams* 2581 (GC).

Rare in leafy soil overlying rocks in the dry forest area.

**Adiantum philippense** L., Sp. Pl. ii: 1094 (1753).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3376 (GC; K). Akpafu, *Scholes* 35A (BM; GC).

ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 580 (GC). Saunders' Fall, near Kintampo, *Adams* 963 (GC). II. Juaso, *Irvine* 2825 (GC). IV. Mampong, *Adams & Akpabla* 4533 (BM; GC).

NORTHERN TERRITORIES. I. Near Damongo, *Adams* 959 (GC; P; US). IV. Bongo, *Cudjoe* 102 (GC).

Locally abundant in shady rocky places on very well-drained soil in the more northerly and drier parts of the forest.

**Adiantum soboliferum** Wall. [Numer. List: 4, n. 74 (1829), *nom. nud.*] ex Hook., Sp. Fil. ii: 13, t. 74 A (1851).

COLONY. *Eastern Province*: III. Bana Hill, Krobo, *Irvine* 2880 (GC).

SOUTHERN TOGOLAND. I. Fume, *Morton* (GC).

ASHANTI. II. Lake Bosumtwe, *Box* 2900 (BM; GC); *Adams* 97 (GC), 99 (GC), 540 (GC; K; P; US); *Adams & Akpabla* 4541 (GC).

Rare and local in shaded well-drained places on steep slopes in the forest.

**Adiantum vogelii** Mett. ex [Kuhn, Fil. Afr.: 66 (1868), *nom. synonym.*] Keys. in Mém. Acad. Imp. Sci. St.-Petersb., Sér. 1, xxii, 2: 8, 31 (1875).

*Adiantum tetraphyllum* sensu Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898).—Chipp, List Herb. Pl. G.C.: 39 (1914); non Humb. & Bonpl. ex Willd.

*Adiantum hispidulum* sensu Irvine, Pl. G.C.: 10 (1930); non Sw.

COLONY. *Western Province*: I. Basakeh, near Axim, *Cudjoe* 16 (GC). II. Neung

F.R., Tarkwa, *Cudjoe* 23 (GC; K; P; US). IV. Asin-Nyankumasi, *Cummins* 85 (K). Sapawni, Pra River, *Johnson* 995 (GC; K). Asuansi, *Box* 2031 (BM; GC); *Scholes* 157 (GC). Agona-Mankrong, *Vanderpuye* 2 (GC). Eastern Province: I. Anyinam, *Obeng* 6 (GC; K). Bunsu, *Footte* 120 (GC); *Cudjoe* 77 (GC). Nkwantanang, near Abetifi, *Scholes* 125 (BM; GC). Oda, *Box* 2483 (BM; GC). Puso Puso ravine, Atewa range, *Adams* 73 (GC). Asiakwa, *Adams* 198 (GC), 420 (GC). Kukurantumi, *Adams* 251 (BM; GC). II. Aburi, *Johnson* 201 (GC). Mampong, *Box* 2090 (BM; GC). III. Dawa Mate Kole, *Thomas* D31 (GC; K). Boti, near Huhunya, *Adams* 277 (GC), 286 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3379 (GC).

ASHANTI. II. Bompata, *Vigne* 2705 (FHK). Konongo, *Akpabla* 261 (GC; K). Agogo, *Footte* 100 (GC). Lake Bosumtwe, *Box* 2897 (BM; GC); *Adams* 96 (GC), 100 (GC). III. Amentia, *Irvine* 462 (K). IV. Mampong, *Vigne* 4100 (FHK; K).

WITHOUT LOCALITY. *Farmer* 443 (K); *Fishlock* 43 (K).

Throughout the forest in various shade habitats.

### PELLAEA Link

*Pellaea doniana* Hook., Sp. Fil. ii: 137, t. 125 A (1858).

COLONY. Eastern Province: I. Akantin, *Vigne* 4042 (FHK; GC; K). Abetifi-Abene road, *Scholes* 114 (GC). Near Begoro, *Adams* 450 (GC). II. Achimota (cultivated), *Irvine* 2589 (GC). Aburi, *Obeng* 27 (GC; K); *Adams* 208 (GC). Larte road, *Box* 2093 (BM; GC). Nsawam-Aburi road, *Box* 2877 (BM; GC). Near Mamfe, *Adams* 302 (GC). III. Peji Hill, Anum, *Adams* 143 (GC; K). Boti, near Huhunya, *Adams* 285 (GC). Volta River F.R., near Odumase, *Adams* 371 (GC), 993 (GC). Odumase, *Box* 2929 (BM; GC).

SOUTHERN TOGOLAND. I. Kpandu, *Adams* 1794 (GC).

ASHANTI. I. Fuller Falls, near Kintampo, *Adams* 584 (GC). II. Lake Bosumtwe, *Box* 2898 (BM; GC); *Adams* 98 (GC).

Common along roadsides and among rocks in shade in the drier parts of the forest.

### DORYOPTERIS J.Sm.

*Doryopteris concolor* (Langsd. & Fisch.) Kuhn in Decken, Reise Ost-Afr. iii, 3, Bot.: 19 (1879).

*Pteris concolor* Langsd. & Fisch., Ic. Fil.: 19, t. 21 (1810).

*Pteris geraniifolia* Raddi, Opusc. Sci. Bologna iii: 293 (1819).

*Adiantum palmatum* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 234 (1829).

*Pellaea geraniifolia* (Raddi) Fée, Mém. Fam. Foug. v: 130 (1852).—Chipp, List Herb. Pl. G.C.: 40 (1914).

COLONY. Eastern Province: II. Akwapim, *Thonning* (ex Schumach.). Aburi, *Johnson* 10 & 11 (GC); *Irvine* 63 (GC). Akropong, *Irvine* 2597 (K). Mampong, *Box* 2091 (BM; GC). III. Peji Hill, Anum, *Adams* 142 (GC; K). Boti, near Huhunya, *Adams* 284 (GC). Volta River F.R., near Odumase, *Adams* 370 (GC), 992 (GC; P; US).

SOUTHERN TOGOLAND. I. Kpandu, *Adams* 1797 (GC).

ASHANTI. II. Agogo, *Footte* 51 (BM; GC). Lake Bosumtwe, *Box* 2901 (BM; GC).

Frequent on leafy soil overlying rocks in shade in the drier parts of the forest.

**Doryopteris nicklesii** Tard. in Notul. Syst. xiii: 166 (1948).

COLONY. *Eastern Province*: I. Near Bosuso, *Adams* 463 (BM; GC). III. Near Odumase, Many Krobo, *Adams* 477 (GC). Near Otrokpe, *Adams* 566 (GC).

ASHANTI. I. Near Mampong, *Box* 2931 (BM; GC).

Local in sandy soil by paths and roads in hilly parts of the dry forest country.

### VITTARIOIDEAE

#### VITTARIA Sm.

**Vittaria guineensis** Desv. in Mag. Ges. Naturforsch. Freunde Berl. v: 325 (1811).

*Vittaria lineata* sensu Cummins in Bull. Misc. Inf. Kew 1898: 81 (1898); non Sm.

COLONY. *Western Province*: IV. Asuansi, *Box* 2064 (BM; GC). *Eastern Province*: I. Assene, *Foot* 127 (GC). Near Nkawkaw, *Box* 3458 (BM; GC). Near Begoro, *Adams* 449 (GC). Awaham, *Adams* 520 (GC; K; P). Apapam, near Kibi, *Adams* 980 (GC). II. Aburi, *Johnson* 211 (GC); *Irvine* 2790 (GC); *Adams* 179 (GC), 986 (GC; US).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3398 (GC).

ASHANTI. I. Near Mampong, *Box* 2905 (BM; GC). Fuller Falls, near Kintampo, *Adams* 583 (GC). II. Agogo, *Foot* 55 (GC). III. Pra-Anum F.R., *Box* 2924 (BM; GC).

Not uncommon as an epiphyte on tree-trunks, particularly oil-palms, in the forest.

**Vittaria owariensis** Fée, Mém. Fam. Foug. iii: 21, t. 3, fig. 2 (1852).

COLONY. *Western Province*: IV. Asuansi, *Box* 2064A (BM; GC). *Eastern Province*: II. Aburi Hills, *Johnson* 300 (K).

Similar in habitat to the last but much less common; perhaps often overlooked.

### MARSILEACEAE

#### MARSILEA L.

**Marsilea diffusa** Lepr. ex A. Braun in Flora xxii, 1: 300 (1889).

COLONY. *Eastern Province*: II. 24 km. on Accra-Dodowah road, *Scholes* 135 (BM; GC). Achimota (cultivated), *Akpabla* 936 (BM; GC), 943 (GC). 25 km. on Accra-Ada road, *Adams* 175 (BM; GC), 493 (GC). Near Dawa, Accra Plains, *Adams* 436 (BM; GC; K).

NORTHERN TERRITORIES. II. 64 km. on Yendi-Tamale road, *Adams & Akpabla* 4139 (BM; GC). III. Burufo, near Lawra, *Adams & Akpabla* 4378 (BM; GC). IV. 3 km. on Walewale-Gambaga road, *Adams & Akpabla* 4202 (BM; GC).

Not uncommon in seasonal ponds in open country.

**Marsilea fimbriata** Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 235 (1829).—A. Braun in Monatsber. K. Preuss. Akad. Wiss. Berl. 1863: 432 (1864).

WITHOUT LOCALITY. *Thonning* (ex Schumach.).

An imperfectly known species which is, according to Braun's definition, distinguished by its solitary sessile sporocarps.



**Marsilea polycarpa** Hook. & Grev., Ic. Fil. ii: t. 160 (1830).

NORTHERN TERRITORIES. III. Burufo, near Lawra, *Hinds* 5007 (K); *Adams* 943 (BM; GC; K; P; US).

In muddy pools overlying laterite, desiccated in dry season.

It would seem that this species is confined to the specialized habitat of markedly seasonal pools on the flat tops of laterite plateaux. These pools are very shallow and occur in the slight depressions of the impervious ironstone platform. Sterile specimens, which are probably referable to the same species, have been found in a similar habitat in the Anara F.R., Igabi, Zaria, in Northern Nigeria (*Keay FHI*. 25962).

Although strictly annual in the natural environment, this plant, like *M. diffusa*, continues to propagate vegetatively in cultivation so long as adequate moisture is provided.

## SALVINIACEAE

### SALVINIA Adans.

**Salvinia nymphellula** Desv. in Mém. Soc. Linn. Par. vi: 177 (1827).

COLONY. *Eastern Province*: IV. 5 km. from Tefle junction on Viume road, *Foot* 1003 (BM; GC). Near Kpotame on Tefle road, *Adams* 442 (BM; GC; K; P).

Floating, or on mud among sedges and grasses at pond margins in open country. Local.

### AZOLLA Lam.

**Azolla africana** Desv. in Mém. Soc. Linn. Par. vi: 178 (1827).

*Azolla guineensis* Schumach. in Kongel. Dansk. Vid. Selsk. Naturvid. & Math. Afh. iv: 236 (1829).

COLONY. *Eastern Province*: I. Achiasi, near Oda, *Box* 2920 (BM; GC). II. Achimota (cultivated), *Akpabla* 1125 (GC). 25 km. on Accra-Ada road, *Adams* 983 (GC; P; US).

WITHOUT LOCALITY. *Thonning* (ex Schumach.).

Floating on seasonal ponds. Local and sporadic; occasionally abundant.

## LYCOPODIINAE

### LYCOPODIACEAE

#### LYCOPODIUM L.

**Lycopodium cernuum** L., Sp. Pl. ii: 1103 (1753).—Chipp, List Herb. Pl. G.C.: 41 (1914).

COLONY. *Western Province*: I. Axim, *Johnson* 990 (GC; K). Abra, near Axim, *Box* 2872 (BM; GC). Brawile, near Axim, *Cudjoe* 4 (GC; K; P; US). Axim-Agona junction road, *Cudjoe* 54 (GC). Bonyere, near Axim, *Cudjoe* 56 (GC). II. Tarkwa, *Vigne* 4126 (FHK). Subri River F.R., collector unknown (FHK 5243). *Eastern Province*: I. Near Kibi, *Irvine* 1831 (GC; K). Osino, *Obeng* 15 (GC; K). Oda, *Box* 2063 (BM; GC). Potroasi, near Kibi, *Adams* 161 (GC).

SOUTHERN TOGOLAND. I. Biakpa, near Amedjofe, *Irvine* 3391 (GC).

ASHANTI. II. Kumasi, *Irvine* 91 (GC; K).

On roadside and path-side banks and cuttings in the wet forest.

***Lycopodium staadtii*** (Nessel) Adams & Alston, comb. nov.

*Lycopodium phlegmaria* sensu Chipp, List Herb. Pl. G.C.: 41 (1914); non L.

*Lycopodium adolfi-friderici* Herter ex Mildbr. in Wiss. Ergebn. Zweit. Deutsch. Z.-Afr.-Exped. ii: 160 (1922), *nom. nud.*

*Urostachys staadtii* Nessel in Fedde, Repert. Sp. Nov. xxxvi: 189, t. 175 (1934).

*Urostachys adolfi-friderici* Herter ex Nessel [Bärlappgew.: 226 (1939) (*adolphi friedericii*) *sine diagn. lat.*] in Rev. Sudamer. Bot. vi: 167, t. 13 fig. 66 (1940).

COLONY. *Eastern Province*: I. Kankang, *Johnson* 674 (K). Worobong F.R., *Vigne* 4314 (FHK).

ASHANTI. II. Namong, near Ofinso, *Cox* (GC). Bobiri F.R., *Adams* 537 (GC).

WITHOUT LOCALITY. *Fishlock* 83 (GC).

A pendent epiphyte on the high branches of tall trees in the forest. Rare.

## SELAGINELLACEAE

### SELAGINELLA Beauv.

***Selaginella buchholzii*** Hieron. in Engl. & Prantl, Nat. Pflanzenfam. i, 4: 696 (1901); in *Hedwigia* xliii: 51 (1904).

ASHANTI. IV. Ejura scarp, *Adams & Akpabla* 4525 (BM; GC; K).

Growing in damp coarse sand in cracks between horizontal rock strata. Rare.

***Selaginella cathedriformis*** Spring in Mém. Acad. R. Belg. xxiv: 112 (1850).—Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).—Chipp, List Herb. Pl. G.C.: 41 (1914).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Tomento-Ancobra, *Johnson* 987 (GC; K). Axim, *Cudjoe* 76 (BM; GC; P; US). II. Bonsa-Tarkwa road, *Johnson* 988 (GC; K), 989 (GC; K).

SOUTHERN TOGOLAND. I. Kpeme Hill, near Ahenkro, *Adams* 1813 (BM; GC).

WITHOUT LOCALITY. *Fishlock* 45 (K).

On roadside banks in the wet forest. Local.

***Selaginella molliceps*** Spring in Mém. Acad. R. Belg. xxiv: 257 (1850).

*Selaginella zechii* Hieron. in Eng. & Prantl, Nat. Pflanzenfam. i, 4: 697 (1901).

COLONY. *Western Province*: I. Near Prince's Town, *Cudjoe* 94 (GC). II. Mpesem F.R., near Prestea, *Cudjoe* 36 (GC; K; P; US). IV. Foso-Juaso F.R., *Box* 2487 (BM; GC); *Scholes* 251 (BM). Kakum F.R. near Nfuom, *Box* 2855 (BM), 2862 (BM; GC), 2919 (BM; GC), 2935 (BM; GC). Kakum F.R., near Krua, *Box* 2915 (BM; GC). *Eastern Province*: I. Kibi, *Johnson* 506 (GC; K); *Box* 3506 (BM). Puso Puso ravine, Atewa range, *Box* 3256 (BM; GC); *Adams* 418 (GC), 497 (GC). Potroasi, near Kibi, *Adams* 183 (BM; GC). Near Asiakwa, *Adams* 421 (GC). II. Aburi, *Thompson* (BM).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3356 (GC). II. Krachi, *Zech* 388 (B).

ASHANTI. III. Near Fomena, *Box* 2912 (BM; GC).

WITHOUT LOCALITY. *Johnson* 216 (GC); *Foote* 49 (BM); *Irvine* 3537 (BM).

Not uncommon on rocks or roadside and path-side banks in wet shady places in the forest.

**Selaginella myosurus** (Sw.) Alston in Journ. of Bot. lxx: 64 (1932).

*Lycopodium myosurus* Sw. in Schrad., Journ. Bot. 1800, 2: 118 (1801).

*Stachygynandrum scandens* Beauv., Fl. Oware & Benin i: 10, t. 7 (1805).

*Selaginella scandens* (Beauv.) Spring in Bull. Acad. Brux. x, 1: 226 (1843).—Chipp, List

Herb. Pl. G.C.: 41 (1914).—Irvine, Pl. G.C.: 381 (1930).

COLONY. *Western Province*: I. Axim, *Johnson* 991 (GC; K), *Chipp* 415 (FHK; K); *Akpabla* 105 (GC; K); *Foote* 122 (GC); *Joly* (P). Atuabo, *Fishlock* 44 (K). Near Esiama, *Fishlock* 87 (K). Esiama, *Fishlock* 110/111 (GC; K); *Plumptre* (GC). Axim-Esiama road, *Plumptre* (GC). Dixcove, *Box* 2074 (BM; GC). Brawile, near Axim, *Cudjoe* 6 (GC; K; P; US). II. Tarkwa, *Vigne* 4125 (FHK). IV. Asin-Nyankumasi, *Cummins* (K). Abura Dunkwa, *Box* 2062 (BM; GC). *Eastern Province*: I. Brenase, *Irvine* 552 (K). II. Aburi, *Obeng* 18 (GC; K); *Adams* 181 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3373 (GC).

ASHANTI. III. Near Fomena, *Adams* 2498 (GC).

WITHOUT LOCALITY. *Johnson* 213 (GC).

Scrambling and twining among small shrubs or on roadside banks in wet parts of the forest, especially in clearings.

**Selaginella versicolor** Spring in Bull. Acad. Brux. x, 1: 143 (1843).

*Selaginella* sp. nr. *anceps*.—Oliv. in Burton & Cameron, To the G.C. for Gold, ii: 371 (1883).

COLONY. *Western Province*: I. Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K). Axim, *Cudjoe* 74 (GC). II. Simpa, *Vigne* 2915 (FHK). Neung F.R., near Tarkwa, *Cudjoe* 34 (GC; P; US). *Eastern Province*: I. Kibi, *Johnson* 259/248 (GC; K). Bunsu, *Foote* 129 (GC); *Thompson* (BM). Near Begoro, *Box* 2949 (BM; GC). Puso Puso ravine, Atewa range, *Box* 3257 (BM; GC); *Adams* 72 (BM; GC), 89 (BM; GC), 409 (GC; K). Near Asiakwa, *Adams* 191 (GC).

SOUTHERN TOGOLAND. I. Amedjofe, *Irvine* 3357 (GC).

ASHANTI. IV. Ninting Hill, Mampong, *Box* 2904 (BM; GC).

An epiphyte on the trunks of trees and tree-ferns, and on rocks in very damp shady places in the forest.

**Selaginella vogelii** Spring in Mém. Acad. R. Belg. xxiv: 170 (1850).—Oliv. in Burton & Cameron, To the G.C. for Gold ii: 371 (1883).—Chipp, List Herb. Pl. G.C.: 41 (1914).—Irvine, Pl. G.C.: 381 (1930).

COLONY. *Western Province*: I. Axim, *Joly* (P). Prince's River (Yenna or Nyan R.?), *Burton & Cameron* (K?, not found). II. Neung F.R., near Tarkwa, *Cudjoe* 18 (GC; K; P; US). IV. Near Fanti-Nyankumasi, *Box* 2073 (BM; GC). Kakum F.R., near Nfuom, *Box* 2861 (BM; GC). *Eastern Province*: I. Anyinam, *Obeng* 4 (GC; K). Abetifi, *Tschopp* (K). Puso Puso ravine, Atewa range, *Box* 3258 (BM); *Adams* 91 (GC). Potroasi, near Kibi, *Adams* 165 (BM; GC). II. Akropong, *Brown* 332 (K). Koforidua, *Johnson* 267 (GC; K). Mampong, *Johnson* 580 (GC; K).



ASHANTI. II. Kumasi, *de Hoghton* (K). Konongo, *Akpabla 254* (GC; K). III. Banka, *Irvine 480* (K). Between Nkwanta and Sikamang, *Kitson 1246* (K).

WITHOUT LOCALITY. *Winwood Reade* (K); *Fishlock* (K); *McAinsh 873* (K); *Greene* (K).

Terrestrial in damp shady places in the forest. Widely distributed.

## PSILOPHYTINAE

### PSILOTACEAE

#### **PSILOTUM** Sw.

***Psilotum nudum*** (L.) Griseb. in Abhandl. K. Ges. Wiss. Götting. vii, Phys. Cl.: 278 (1857).

*Lycopodium nudum* L.Sp. Pl. ii: 1100 (1753).

COLONY. *Eastern Province*: II. Near Aburi, *Johnson 214* (GC).

Apparently very rare.

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